Bulletin of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE
Vol. XCII, No. 3

A REVISION OF NEARCTIC NITIDULIDAE (COLEOPTERA)

By Carl T. Parsons

With Thirteen Plates

CAMBRIDGE, MASS., U.S.A.
PRINTED FOR THE MUSEUM
April, 1943

Museum of Comparative
Zoology
APR 30 1943

No. 3. — *A Revision of Nearctic Nitidulidae (Coleoptera)* [1]

By Carl T. Parsons

CONTENTS

Page
Introduction 121
  Acknowledgements 121
  Sources of Material 122
  Historical 122
Nomenclatorial Units 123
  On the origin of species and genera in the Nitidulidæ 123
  Evolution and the relative value of morphological characters in the family 126
Zoogeography 127
Biology 128
Morphology 129
Taxonomy 133
  Nomenclature 133
  Explanation of terms 134
  Diagnosis of the family 134
  Account of the genera and species 134
Bibliography 274

INTRODUCTION

During the discreet years of the 1870's, the stork almost invariably arrived at night. This happy phenomenon enabled a Philadelphian obstetrician, Dr. George Horn, to devote his daylight hours to entomology and his evenings to his profession. Dr. Horn not only wrote but printed his entomological papers. The Doctor's type-setting was as painstaking as his discrimination in entomology, and these combined talents led to the appearance in 1879 of an extremely careful review of a family of rather shiny clavicorn beetles appropriately called Nitidulidæ. Since that time the family has been so neglected that the succeeding sixty years have placed our knowledge of the group seriously in arrears. The present paper attempts to atone for this neglect.

Acknowledgements. This work was carried out under Prof. C. T. Brues, to whom the writer is indebted for infinite patience and constructive advice. To other members of the staff of the Museum of Comparative Zoölogy, Prof. F. M. Carpenter, Dr. P. J. Darlington, Jr.,

---

[1] Published with the aid of a special gift from Mr. George. R. Agassiz.

and Prof. Nathan Banks, the writer is also deeply obligated. Too numerous to mention by name are the curators and collectors in this country and Europe, who have permitted the writer unlimited access to the collections in their charge and even dissection of valuable specimens when necessary.

Sources of material. This paper is so much the result of a synthesis of material that it is difficult to single out particular sources for mention here. Certainly the Museum of Comparative Zoölogy contained the most indispensable collection. Here were the types of Leconte, Horn (several holotypes and cotypes of all but three species), Melsheimer, Fall, Crotch, some of Casey, cotypes of Mäklin and Mannerheim, and paratypes of Schaeffer and the author. The United States National Museum contains some of Schaeffer's types, Wickham's type, and a very large and nearly complete series with excellent data. At the Philadelphia Academy of Sciences the writer examined the valuable but obsolete Horn collection. Much critical material was seen at the British Museum (Murray's types and the complete set of Middle American species), Berlin Museum (Erichson's types), the Carnegie Museum (Hamilton and Ulke's types), California Academy of Natural Sciences, American Museum of Natural History, and numerous public and private collections. Also the writer's collection was of great value, because it contained the Leng (Nearctic), Em. Reitter (Palaearctic) collections, specimens compared with most of the other types, is world-wide in scope, and supplied almost all of the material for dissection.

Historical. Linnæus, in 1758, was the first to describe some cosmopolitan nitidulids which have since been found to occur in North America. He placed them in *Dermestes* under the silphids. Then Fabricius, 1775-1798, described from the West Indies the first American species. Fabricius placed his species in *Nitidula*. Latreille, Herbst, Kugellan, Stephens, Shuckard, broke up the genus and added new genera. To them we owe the genera *Cateretes* Herbst (*Cereus* Latreille), *Brachypterus* Kugellan, *Carpophilus* Stephens, *Meligethes* Stephens, *Cychramus* Kugellan, *Cryptarcha* Shuckard, as well as several exotic ones.

But it was not until 1843 that the family underwent a critical examination. In that year Erichson published the most important work ever written on the family, his "Versuch einer systematischen Eintheilung der Nitidularien." The main divisions (now subfamilies) laid down by Erichson are followed almost exactly in the present work. Erichson described in a most complete and accurate manner a large number of genera ("coupes"), of which *Colastus*, *Brachypeplus*, *Cono-*

telus, Epuraea, Soronia, Prometopia, Amphotis, Lobiopa, Omosita, Phenolia, Stelidota, Thalycra, Pocadius, Camptodes, Cyllodes, Amphicrossus, Pallodes, Oxycnemus, occur in the Nearctic region. In the same work Erichson described a number of species from eastern United States.

Following Erichson, Leconte added two genera and a large number of species. In 1879 Horn published his careful "Revision of the Nitidulidæ of the United States," describing two new genera and several species. Since Horn, there have been only scattered descriptions, except for the revision of one genus (*Glischrochilus*) by Brown in 1932.

Erichson (1843, 1844) included *Rhizophagus, Cybocephalus,* and *Ostomatidæ* in the family. Horn, 1879, likewise included *Rhizophagus, Cybocephalus,* and also *Smicrips* (now placed in the *Cucujidæ*) but excluded the Ostomatidæ. Grouvelle, 1913, excluded *Rhizophagus* which has since constituted a separate family. Murray, 1864, and recently Peyerimhoff, 1933, Böving and Craighead, 1931, have excluded *Cybocephalus* to form a separate family. The present writer concurs in this arrangement. The relationships of the Nitidulidæ with its nearest relatives, Rhizophagidæ and Cybocephalidæ, are given under "Morphology" (p. 129).

The subfamilies here treated as the Cateretinae and Meligethinae have been made a separate family (Brachypteridæ) by Verhoeff, 1928, on the basis of larval characters. Since the larvæ of many aberrant genera are still unknown, it is premature to make new families. The writer believes that the classification within a family can often be made to show the anomalous character of a subfamily without creating a new family. As for the Nitidulidæ the present subfamilies are on the whole so nebulous that they could easily be made tribes under the Nitidulinæ, which would then rank equally with the Cateretinæ and Meligethinæ.

Nomenclatorial Units

On the origin of species and genera in the Nitidulidæ. The basic unit used in naming the groups of individuals is the species. Unfortunately, due to lack of sufficient material, the term species is sometimes used to define a rather vague and sometimes highly variable syngamium.

Most of the species seem to be monotypic (Rensch's *Ar*), that is to say are not differentiated into subspecies. In many cases the affinities between monotypic species are clear, and in such cases the relationships are indicated by comparisons which appear after the descriptions. Since no intergradations are apparent, these species are thought of as monotypic.

Polytypic species (Rensch's *Formenkreis*) are species which are differentiated into two or more subspecies. Again due to lack of material, the few forms that appear to be subspecies are treated as species even though intergradations are evident. In some other cases, variations which may well be of subspecific value are lumped under one species.

The writer believes that, in a work of this kind, the only key to the origin of species lies in a study of the polytypic species. Among the terrestrial vertebrates and many invertebrates (such as Carabidae and Molluscs) Huxley, Rensch, and others believe that the most important manner of originating new species is by the formation of geographical subspecies. As for the Nitidulidae, the writer believes from the sketchy evidence that the geographical splitting up of species is less important than ecological separation of species. A good example is *Carpophilus melanopterus* and *rufus*. Heretofore, *rufus* has been thought to be either synonymous with or a mere color variety of *melanopterus*. But it was found that *melanopterus* is restricted to *Yucca* blossoms, whereas *rufus* is found on flowers of cacti. The ranges of the two forms overlap, but because of the distinct ecology, constant color differences, and slight sculptural tendencies to vary, the forms are considered distinct species.

There are some cases whereby special isolation has been enough to make new species. In North America the most important factor limiting distribution is the lack of rainfall in the Great Plains region. Although many species are found from Quebec to Florida, the western limit of their range is, in almost every case, along the ninety-seventh parallel. Some species, however, extend from coast to coast across Canada and then range southward in the east and in the Rocky Mountains. In that way *Perthalycra* may have become split into an eastern and western species.

Oceans, of course, are more definite barriers to distribution. Thus we find *Thalycra* with a species in Europe and another in Michigan. The cosmopolitan and even Holarctic species are clearly distributed by man.

Another possible method of species formation is hybridization, a method seldom discussed with respect to insects. Since botanists and vertebrate zoologists often mention hybrids without experimental evidence, there seems to be no reason why entomologists cannot do likewise. Among the nitidulids, *Carpophilus sayi* and *lugubris* evidently hybridize along a region extending from Virginia to Illinois. The intermediate form has distinctive facies and may well be an incipient species. In *Oxycnemus* there are two species which are occasionally found together in the same fungus yet retain constant and distinctive structural and color differences. Very rarely occur two forms of apparent hybrids. Both of these forms have characters which belong to one or the other of the parent species or are intermediate. Significantly one of the forms is much larger than either of the parent species, a characteristic often found in hybrids of other animals and plants.

Thus in writing this paper at least three methods of speciation became evident. The method of hybridization, although hypothetical, is clearly indicated and could be tested experimentally. Of the other two, the occupation of a new habitat seems to be a more important method of speciation than geographical isolation. Just how it takes place would be a most pertinent problem for investigation.

The geographical subgenus or genus (Rensch's *Artenkreis*) is a group of related forms clearly meriting specific rank, but showing geographical replacement to a degree which makes it certain they have arisen by geographical differentiation. Huxley wrote the above definition having in mind mainly vertebrates and molluscs. The Nitidulidae (and also insects in general) offer evidence that the definition should be extended to include ecological and biological replacement, as well as geographical. Many a morphologically aberrant species is found to differ ecologically from its congeners. For example, the most distinctive species of Nearctic *Epuraea* is *monogama*. This species occurs in the fungus *Polyporus volvatus,* whereas the others are found under bark, at flowers, etc. An example of geographical replacement would be the Nearctic *Cateretes* of the subgenus *Pulion,* which differs from the Palaearctic species in the subgenus in one character of generic importance, namely, the eighth abdominal segment visible in the male. Both the *Epuraea* and the *Cateretes* seem to the writer to be incipient genera.

True genera which appear to have arisen by geographical replacement would be *Boreades* (annectant between the Neotropical *Cercometes* and the Palaearctic *Heterhelus*) and both *Perthalycra* and *Quadrifrons* (probably from the Holarctic *Thalycra*). Also *Phenolia* is an eastern Nearctic derivative of the cosmopolitan *Soronia.* Significantly these are the only endemic Nearctic genera (except *Anthonaeus*, *Orthopeplus*, mentioned below). The other genera are too widely distributed to hazard a guess as to their geographical origin.

On the other hand, so many of the genera have such distinctive habits that they may have originated by ecological replacement. For instance, of the endemic genera, *Anthonaeus* is a depressed *Amartus* modified for flowers of *Agave,* and *Orthopeplus* is an *Epuraea* evidently adapted for living in tunnels. *Pocadius, Cychramus, Cyllodes,* and *Oxycnemus* are four rather closely related genera each of which is restricted to a different genus of fungus. Many more examples could be given of genera that are ecologically distinct.

Since the most anomalous species of a genus is often also ecologically aberrant, and since the genera are mostly very widespread, with overlapping ranges, yet ecologically distinct, the writer believes that nitidulid genera arose chiefly by the assumption of a new habitat by a species.

When the new genus (or subgenus) comes into existence by occupying a new habitat, the environmental pressure would, in many cases, be suddenly relaxed. This relief of competition would mean that the pressure of natural selection is also lessened. Thus many mutations that would be lethal in the old habitat would be viable in the new one. But once the new habitat is thoroughly occupied, the pressure of natural selection would again be so strengthened that the evolution of new forms would be greatly impeded or even halted. One would then expect to find the nitidulids split up into a large number of distinct genera, each in a separate ecological sphere and each embracing very few species. And such is the case, for there are about one-fourth as many genera as species of Nearctic Nitidulidae. The proportion of genera to species would be very much higher if it were not for two large genera which have succeeded in occupying a variety of habitats. The genera of the future may be expected to come from the still actively evolving species of these genera. The two genera are *Carpophilus* (29 species) and *Epuraea* (29 species). As one would expect, the discrimination of species is most difficult here.

The genus is generally considered to be an artificial and arbitrary unit of classification, but the writer believes that it need not be. When examined in the above manner, the geographical or ecological genus appears to be a natural taxonomic unit. Certainly, it is necessary to know well not only the complete morphology but the biology of each species (and its forms) before a natural classification can be wrought. Unhappily our knowledge of the Nitidulidae permits only an approximation to such perfection.

Evolution and the relative value of morphological characters in the family

Clues to how the family is evolving may be found by examining the characters used in taxonomy. The more carefully the taxonomic work has been done, the greater are the number of available clues. The subfamily characters are mainly highly tenuous and of only generic magnitude. The subfamily does seem to be valuable, however, in indicating the evolutionary trends evinced by groups of genera. The

Cateretinae is the most primitive and discrete subfamily, whereas the Cryptarchinae is the most derivative, if more nebulous, unit.

The characters of value in defining genera are many and usually very definite. Interestingly, they are almost entirely different from specific characters. The specific characters have to do with variations in sculpture, pubescence, and color. Color is a highly unreliable criterion. Whereas variations in sculpture are sometimes present but then only within definite limits diagnostic for each species. For instance, as the figures show, the profile of the prosternum in *Pocadius* is variable but only within specific limits. Individuals of *Pocadius* vary sculpturally only in this manner. The differences can hardly have a selective value. Evidently, such variation seems to be an external, phenotypic manifestation of the genetic mutations which have differentiated the species of *Pocadius*.

Zoogeography

A perusal of Table I will show the preponderance of the Nitidulinae over the other subfamilies. One would assume that this is the most successful, if it were not heterogeneous and probably in need of being partitioned into several subfamilies. At present, evolution seems to be in progress in all of the subfamilies, because, of the Nearctic genera, there is at least one genus in each subfamily in which speciation is now active.

Table I

Subfamilies	No. of genera	%	No. of species	%
Cateretinae	6	15	11	7
Carpophilinae	4	12	40	27
Nitidulinae	21	62	76	50
Meligethinae	1	3	5	3
Cryptarchinae	3	8	20	13
Total	35	100	152	100

An examination of Table II offers clues to the history and origins of the Nearctic genera. In the first place, most of the genera must be ancient (of early tertiary or even Cretaceous origin) since more than half are cosmopolitan or nearly so. Where these widespread genera started cannot be conjectured. About an equal number of genera are Holarctic or American in distribution. The Holarctic genera, except for *Brachypterolus,* seem to have arrived in North America from Siberia. The New World and two of the tropicopolitan genera appear to be relatively recent arrivals from the tropics into the United States. Six genera are endemic to North America.

Thus a surprisingly small proportion of the Nearctic fauna is autochthonous. Evidently the bulk of the present fauna immigrated several times during the Tertiary period.

Table II

Genera of Nearctic Nitidulidae	Cosmopolitan	Holarctic	New World	Nearctic
Cateretes		+		
Boreades				+
Brachypterus	+[1]			
Brachypterolus		+		
Amartus		+		
Anthonaeus				+
Conotelus			+	
Brachypeplus	tropicopolitan			
Colopterus			+	
Carpophilus	+			
Haptoncus	tropicopolitan, also			subtropics
Epuraea	+			
Orthopeplus				+
Stelidota	+			
Omosita	+			
Nitidula	+[1]			
Prometopia	tropicopolitan, also			+
Lobiopa			+	
Soronia	+			
Phenolia				+
Amphotis		+		
Thalycra		+		
Perthalycra				+
Quadrifrons				+
Pocadius	+ except Australian			
Camptodes			tropics	
Amphicrossus	tropicopolitan, also			+
Cychramus	+ except Ethiopian			
Pallodes	+			
Cyllodes	+			
Oxycnemus	+ except Ethiopian and Austr.			
Meligethes	+ except Neotropical			
Cryptarcha	+			
Pityophagus		+		
Glischrochilus	+ except Ethiopian			

[1] = neither Australian nor Oriental.

Biology

The habits of the Nitidulidae are remarkably variable. In the most primitive subfamily (Cateretinae) the larvae live in the seed capsules of various plants and the adults feed on the pollen and petals of the same plants or sometimes of others. The members of the other subfamilies are primarily saprophagous and mycetophagous. Although some live in flowers, the majority live in decaying fruits, fermenting plant juices, and in fungi. Some genera live in a particular fungus peculiar to that genus. *Epuraea depressa,* according to Dodge, breeds in the nests of bumblebees, and the larvae are considered fungivorous. Cockerell has collected *Epuraea integra* in the nest of *Bombus juxtus.* This habit is similar to the Australian *Brachypeplus auritus* of which the larvae and adult feed on the wax and honey of a wild bee. *Amphotis* occurs in ant nests; *ulkei* is strictly myrmecophilous in the early spring but in the fall of the year is found in decaying fungi. *Nitidula* and *Omosita* breed in carrion. In Europe the larvae of certain *Glischrochilus, Nitidula,* and *Pityophagus* are predaceous on Scolytids and may have similar habits in the United States.

In temperate regions most of the species hibernate beneath logs. Pupation takes place in the earth, which indicates that the pupae may hibernate also. In the tropics the life cycle seems to be continuous, although there must be aestivation over extremely dry seasons.

Morphology

The antennae are eleven-segmented. The three-segmented club is variable; it may be hardly noticeable, as in *Cateretes,* or compactly circular as in *Camptodes.* In the Rhizophagidae the ten-segmented antennae have a two-segmented club. Among the Nitidulidae a tendency to this reduction is evinced in the Oriental *Chalonecrus wallacei.*

Many genera have a pair of narrow grooves on the under side of the head, on each side, for the reception of the basal portions of the antennae. These extend backward obliquely or parallel with each other. The presence or absence of the grooves is a useful generic character, but the degree of convergence is of doubtful value.

The mandibles are rather broad, with a brush of hairs on the inner margin, often bidentate at the apex, the inner tooth often being smaller and shorter than the outer. They may be unequal in length, as in the males of *Cryptarcha.* Also only one may be bidentate, or there may be a number of small teeth behind the apex.

The maxillae are bilobed (galea present) in the Cateretinae but with a single lobe (lacinia) among the remaining groups. The galea is always slender and never has more than a few hairs at tip. In some *Brachypterus* and *Amartus*, at least, there is a small vesicle at or near the extremity, which may have some gustatory function. The lacinia is rather narrow in the Cateretinae but broader in the other groups, with a brush of hairs at the extremity and often on the inner margin. The relative sizes and shape of the laciniae and palpi are useful in indicating generic affinities.

The ligulae are rather variable in shape. The three-segmented labial palpi are inserted on a distinct palpiger on the ventral side of the ligula. Placed more or less dorsally on the anterior and lateral margins of the ligula are the pair of paraglossae, which may be large and horn-shaped, reduced, or absent. The palpi in particular offer good characters for generic differentiation.

The mentum is usually trapezoidal, bisinuate in front, and rather invariable, consequently not very useful for generic differences. The mentum of *Amphotis*, however, shows specific differentiation.

The labrum is transverse, and usually more or less bilobed. It is exposed, except in *Meligethes* where it is concealed by the clypeus. The labrum is articulated by a pair of slender struts produced posteriorly from each posterior angle and also by a short, median, triangular projection.

The clypeus is distinct in some of the Cateretinae but is usually indistinguishable from the front.

The eyes are lateral, rounded, and large. The degree of coarseness of the facets varies generically in the Nitidulinae.

The prothorax is highly variable in form but there is a general tendency for the lateral margin to be explanate. The prosternum is produced posteriorly into a lamellate process which extends between the coxae and sometimes overlaps the mesosternum. The anterior coxal cavities are obtuse at the proximal end and terminate in a point directed obliquely antero-laterally. The anterior cavities are open behind only in the Cateretinae.

The mesothorax is short; the episternum large with a narrow epimeron along its outer margin. The scutellum is usually triangular, but it may be pentagonal, semicircular, or quadrangular. The sternum is sometimes carinate and the coxal cavities are closed and strongly transverse. The elytra tend to be shortened but often only part of the pygidium is exposed. All the Carpophilinae have shortened elytra exposing two or three tergites. Thus *Conotelus* resembles Staphylinidae of the tribes Piestini or Phloeocharini. The epipleurae are usually broad and often extend to the apices.

The metathorax is large; the rather broad episternum extends along its entire length. The sternum is often divided by a suture medianly from its posterior margin. In many genera there is a triangular space on each side of the sternum bounded by the mesocoxa, the episternum, and an oblique raised line, evidently not a suture. Blackburn (1891) calls it for convenience the "intermediate plate" and thinks it is the mesosternal epimeron. As noted above, the writer thinks another sclerite is the mesosternal epimeron and that this space is much too posterior to be a mesopleurite. Since the space may be variously developed and even absent within a single genus (*Carpophilus*) or even species (*Carpophilus lugubris*), the writer believes it is part of the metasternum. In *Carpophilus sayi* the space is strongly transverse, with only a suggestion of obliquity at the distal end of the suture. Murray (1864) calls it the axillary piece. This writer, following Fall (1910), refers to it in the text as the "axillary space". The posterior coxal cavities are closed behind, strongly transverse, and extend to the margins of the body.

The wings of all but one of the Nearctic genera are figured. The figures show that the degree of development of the veins is proportional to the size of the species. Venation is almost absent in the smaller genera and well developed in the larger genera. Evidently it is impossible to draw up family characters of venation from a sample genus, as has been done in the past. The folding is extremely complex, so that the venation of the distal half of the wing is almost absent. A median, cubitus, and some anal veins are more or less normal, whereas the veins anterior to the median are greatly anastomosed and crowded near the base of the wing near its anterior margin. The wing is lobed at its base. The absence of the lobe in the figures of two of the genera is probably due to errors in dissection.

The legs are rather short and somewhat retractile. The coxae are strongly transverse but never contiguous. Actually the anterior coxae are probably always contiguous beneath the prosternal process. The femurs are sometimes canaliculate for the reception of the tibiae. The tarsi are almost always dilated with a cushion of hairs beneath; the fourth segment is minute, the fifth about as long as the first three, and the claws are either toothed or simple.

The abdomen is composed of seven tergites and five sternites. The characteristically shield-shaped seventh tergite and fifth sternite are the pygidium and hypopygidium respectively. Contrary to Ganglebauer (1899) the writer believes with Lesne (1939) that the hypopygidium represents the seventh sternite. Since only five sternites are visibly distinct, two basal sternites have anastomosed. There are six spiracles on the antero-lateral margins of the tergites.

The male has a well developed additional or eighth tergite always present and visible in most genera. Reitter and Horn speak of the additional dorsal segment of the male as the sixth. Murray says it is either the seventh or eighth. Ganglebauer (1899), Lesne (1938), and the present writer call it the eighth. Lesne (loc. cit.) speaks of the male eighth segment as the pygidium. Since, with Coleoptera, it is impossible to speak of the true pygidium and since the additional segment is not visible in some male and all female nitidulids, the writer believes that the characteristically shaped seventh dorsal segment of both sexes should be termed pygidium.

The genitalia, as described here, are mainly the highly modified distal abdominal segments. An examination of the plates will elucidate the following descriptions.

In the male the eighth tergite is well developed but the eighth sternite is much reduced. To the sternite is attached a strut. The ninth tergite (epandrium) and sternite (hypandrium) form a highly sclerotized tubular structure or tegmen, which serves to guide the ejaculatory duct into the vulva. A pair of parameres, articulated to the tegmen, may or may not be present. As the figures show, the structure of the male genitalia varies greatly between genera but the writer has been unable to detect useful specific differences.

The female genitalia are less specialized than the male. The eighth tergite and sternite are only slightly modified. As in the male, the sternite is attached to a ventral strut or spiculum ventrale. The eighth segment is connected by a long intersegmental membrane to the valvifer and paraproct. The paraproct is dorsal and evidently borne on the distal part of the valvifer. The valvifer bears ventrally a pair of appendages termed coxites, which in turn bear a pair of probably tactile styli. Between the coxites near their base on the ventral side is the vulva, which connects with a large bursa copulatrix by way of the vagina. A slender duct joins the consistently oval spermatheca (with its gland) to the bursa copulatrix.

Wandollek (1905) maintains that the paraproct, valvifer, and coxite compose the ninth tergite and sternite. Verhoeff (1894) added the styli to the ninth sternite. Wheeler (1893), Crampton (1925), and Tanner (1927) say the coxites, with their styli, are appendages of the ninth sternites and that the proctiger is the tenth tergite. The

Nitidulidae indicate nothing in disagreement with this view. Tanner (1927) proposes the term baculi for the rod-like structures of the paraprocts, valvifers, and coxites.

The female genitalia present two principal types. The first is relatively little sclerotized, elongate, slender, and with well developed styli. It occurs exclusively in the Cateretinae and in the other subfamilies, except Meligethinae. In the other type the genitalia are strongly sclerotized distally; the coxites are greatly shortened and even modified into a blade or serrate; the styli are greatly reduced and laterally placed. It occurs in the Meligethinae and sporadically in all the other subfamilies but the Cateretinae. Apparently no phylogenetic significance can be attributed to these types, nor can any correlated development of male and female genitalia be detected.

For the purpose of separating and relating species, the female genitalia are superior to the male. The coxites, in particular, offer the clearest characters.

The Rhizophagidae differ from the Nitidulidae in having ten-segmented antennae, heteromerous tarsi in the males, seven abdominal spiracles, galea present (as in the Cateretinae), and distinctive larva. They seem to be intermediate between the Nitidulidae and the Ostomatidae. The Cybocephalidae differ in having four-segmented tarsi, body retractile, mandibles in repose resting against the metasternum, five abdominal spiracles, and distinctive larvae. For these reasons it seems best to separate the two families as the nearest relatives of the nitidulids.

Taxonomy

Nomenclature. In determining problems of nomenclature the writer has followed the *International Rules of Zoological Nomenclature* (1926, Proc. Biol. Soc. Wash., 39: 75–104). The designation of genotypes in this family has never been accomplished. This omission is remedied for the Nearctic genera. Whenever the genus is not monotypic or the type is not designated in the original description, the first valid species mentioned by the describer of the genus is employed. In order to corroborate the inclusion of the type species in the genus, the writer has examined the genotype in almost every case.

For all names binomials only are employed. Occasionally varieties will be raised to subspecies or species relegated to subspecific status. When this is done, the writer believes trinomials should be used.

In finding the proportions of the prothorax and elytra the writer has measured the greatest possible width and length.

Explanation of terms. One of the chief excuses for the account of morphology is to make the descriptions as explicit as possible. At least two terms, however, may be explained here. The epistoma of previous authors is the clypeus. By "dorsal segments" is meant the abdominal tergites exposed behind the elytra, including the pygidium. The abbreviation "M.C.Z." stands for the Museum of Comparative Zoölogy.

Diagnosis of the family: adults. Very variable in shape; small or medium in size. Antennae inserted under the frontal margin in front of the eyes; eleven-segmented; a three-segmented club usually very distinct but sometimes only slightly developed. Antennal grooves usually present. Mouthparts normal; galea present only in the Cateretinae. Elytra entire, sometimes shortened to expose two or three abdominal segments. Prosternum with a process produced between the front coxae. The metepisterna attaining the metacoxal cavities. All coxae transverse and separated. Anterior coxae with free trochantin and either open or closed behind. Middle and hind coxae closed behind. Hind coxae almost attaining the lateral margins of the body. Legs short and moderately retractile. Tarsi five-segmented, first segment of normal size, the fourth very small, and the fifth longest. Abdomen with six spiracles; five visible sternites; seven tergites, and in the male often an eighth tergite is visible.

Larvae. Body sparsely haired. Head transverse, mouth porrect, clypeus feebly distinct, labrum distinct. Maxillae deeply retracted, maxillary palpi two or three-segmented. Labial palpi very short, two-segmented. Ocelli variable. Legs rather short.

Key to subfamilies of Nitidulidae

1. Maxillae with one lobe (lacinia); antennae distinctly capitate....2
   Maxillae with two lobes; antennae feebly capitate....Cateretinae
2. Abdomen covered, at most with the pygidium exposed..........3
   Abdomen with two or three segments exposed..Carpophilinae (p. 150)
3. Labrum free, more or less visible...........................4
   Labrum connate with the clypeus...........................5
4. Mesosternum not carinate; or the prosternum depressed behind the coxae and not prolonged, or the pronotum margined at base..................................Nitidulinae (p. 182)
   Mesosternum carinate; prosternum elevated and prolonged behind, the tip enlarged, free, and overlapping the mesosternum; pronotum not margined at base; all tarsi dilated..Meligethinae (p. 251)
5. Suture of the labrum more or less distinct....Crytarchinae (p. 257)
   (no alternate)

CATERETINAE

Cateretes Er., 1843, in Germar, Zeitschr. für Ent., 4: 226 Brachypterinae auct.

This subfamily contains fifteen genera, none of which contain many species. Six genera, two endemic, are found in the Nearctic region.

Key to genera of Nearctic Cateretinae

1.	Claws simple	2
	Claws distinctly dentate at base	4
2.	Length under 3 mm	3
	Length over 3 mm	5
3.	Color of elytra testaceous to piceous	*Cateretes*
	Color of elytra metallic blue-green	*Boreades*
4.	Posterior pronotal angles obtuse	*Brachypterus*
	Posterior pronotal angles rectangular	*Brachypterolus*
5.	Body convex	*Amartus*
	Body depressed	*Anthonaeus*

Cateretes Herbst

Plates 1, 12

Kateretes Herbst, 1793, Natur. aller bek. u. ausl. Insekten **5**, 11, ex parte. Type: *Nitidula pedicularis* L.
Cateretes pro *Kateretes* Illiger, 1798, Verz. Käf. Preuss., p. 395, ex parte.
Cereus Latreille, 1796, Précis Caract. gen. Ins., p. 68. Type: *C. rufilabris* Latr.
Anisocera Stephens, 1832, Ill. Brit. Ent., **5**, 438. Type: *C. pedicularis* L.
Anomaeocera Shuckard, 1840, Col. delin., p. 25. Type: *C. pedicularis* L.
Subgenus *Pulion* des Gozis, 1886, Rech. de l'esp. typ. Monlucon, p. 12.

Head much narrower than the pronotum, emarginate, front separated from the clypeus by a transverse furrow or by a fine transverse line. Antennae with a rather narrow, indistinct club; in the male of the subgenus *Cateretes* s. str. the first two segments or only the first are enlarged. Labrum transverse, deeply emarginate, with broadly rounded lobes. Mandibles broadened on the outer side of the base, with a single untoothed apex. Lacinia terminating in a point which is bent inwards almost at right angles, a tuft of hair at the bend; galea is very slender and glabrous. Maxillary palpi short and thick, first segment a little shorter and slenderer than the second; second and third of equal width, third somewhat longer than the second, the apical segment as long but slenderer than the second. Mentum strongly transverse. First segment of labial palpi very small, second short and clavate; the apical segment as long as the other two segments combined. Pronotum as broad or somewhat narrower than the elytra, rounded on the sides, often more strongly narrowed anteriorly than posteriorly, with rounded angles; sides narrowly arcuate; at the base slightly rounded. Scutellum large, triangular. Elytra with narrow epipleurae; pygidium free and broadly truncate. The prosternal process between the front coxae narrow. The mesosternal process broader, middle coxae further apart than the front coxae. Metasternum about as long as the first two ventral segments together. Metepisternum pointed posteriorly. First ventral segment, in the middle, as long or longer than the second and third together, second and third short, fourth and fifth longer. A dorsal segment visible behind the pygidium in the male of the American but not the European species. Femurs rather short, tibiae gradually broader towards the apex. The first three tarsal segments dilated, of equal length, long thick hairs on the under side; third tarsal segment deeply bilobed; the fourth very small, the fifth about as long as the first four combined. Claws simple.

Since *Cateretes* is the most generalized nitidulid, its description is made particularly complete.

Of the New World genera *Cateretes* is nearest to *Boreades* new genus but differs in a number of ways, as shown in the figures; *Cateretes* is also close to the European *Heterhelus* but differs in the shape of the pronotum, labial palpi, mentum, and maxillae.

The larva of *C. rufilabris* (Latr.) has been described by Perris, 1876, Ann. Soc. Ent. Fr. p. 214; Larves de Coleopt. 1877, pp. 38–39.

In Europe the larvae live in the flowers of *Juncus* (Juncaceae) and pupate in the earth; the adults are found on the flowers of *Spiraea* (Rosaceae), sedges (Cyperaceae), rushes (*Juncus*), and generally in swampy places.

The genus *Cateretes* is strictly Holarctic. Two species are Nearctic and five are Palaearctic. The types of the Nearctic species have been examined in the British Museum, and all of the species, except *C. flavicans* Fairm. (Algeria), have been examined in the writer's collection.

Key to subgenera

1. In the males the first or also the second antennal segment dilated. Antennae usually in the female extending beyond the hind margin of the pronotum. Head strongly transverse, with small, strongly prominent eyes; a deep transverse line between the bases of the antennae. Pronotum with evenly rounded hind angles, weakly convex, coarsely and sparsely punctate. . . . Subg. *Cateretes* s. str.

2. Antennae simple in both sexes, not attaining the hind margin of the pronotum. Head weakly transverse, with larger, weakly prominent eyes and finer clypeal suture. Pronotum with evenly rounded or more or less quadrate hind angles, more strongly convex; less coarsely and sparsely punctate . . . . . .Subg. *Pulion.*

Key to species of subgenus Pulion

Elytra sparsely punctate, the distance between the punctures greater than the size of the punctures . . . .*pennatus.*

Elytra densely punctate, the distance between most of the punctures less than the size of the punctures . . . .*sericans.*

CATERETES (Pulion) PENNATUS (Murray)

Plate 1, figs. 1–4, 7; 12, fig. 1

Cercus pennatus Murray, 1864, Trans. Linn. Soc. London, 24: 235.

Cercus crinitus Murray ♂, *loc. cit.*, p. 237.

Types: of *pennatus* from "Canada, Pennsylvania, and other parts of North America"; of *crinitus,* from Tennessee, are in the British Museum.

Oval; moderately robust; typically dull fulvous or dark piceous but may be testaceous or ferrugineous; moderately shining; sparsely pubescent. Head moderately densely punctate, front feebly bi-impressed, with a transverse black line joining the two impressions. Thorax with width and length as 1.5 to 1; apex hardly if at all emarginate; sides rather strongly arcuate, in the female slightly sinuate posteriorly, in the male evenly arcuate, margin narrowly reflexed; disc rather strongly convex, moderately densely punctate. Scutellum coarsely but sparsely punctate. Elytra with length to width as 1 to 8, apices truncately but evenly rounded, surface not coarsely nor densely punctate. Pygidium sparsely punctulate, the entire hind margin of the tergite anterior to the pygidium showing from beneath the elytra. Body beneath sparsely punctulate. Legs and antennae are usually paler than the body. Length 1.9–2.5 mm.

This species is so closely related to *sericans* that the two cannot always be separated with certainty. But *pennatus* is larger, more robust, apices of the elytra more rounded, more of the abdomen showing, more densely and coarsely punctate elytra, antennal club more distinctly of two not three segments and the pronotum proportionately wider.

This species occurs (May-July, mainly May) from Quebec to North Carolina (Gray Beard Mt.) west to Kansas (Douglas Co., Argentine) across Canada to British Columbia (Terrace, Frazer Valley, Kaslo, Cawston, Steelhead) south in the coastal region to California (Ventura, S. Paula, Berkeley on *Sambucus*) where it seems to intergrade with *sericans*.

Cateretes (Pulion) sericans (Leconte)

Plate 1, figs. 9, 12

Cercus sericans Lec., 1869, Proc. Ac. N.S. Philadelphia, p. 69.
Type: from "Tejon" Fort Tejon, California, lectotype ♀, M.C.Z. no 6988 and 4 cotypes (3 ♀ ♀, 1 ♂). A cotype is in the British Museum.

Oval; slightly oblong; usually testaceous, often with head and elytra piceous, occasionally entirely castaneous to dark piceous above with pale legs and antennæ; surface feebly shining; sparsely pubescent. Head sparsely punctate, front with fine black transverse line. Antennal club feebly three segmented. Thorax with width to length as 1.3 to 1, apex not emarginate, disc strongly convex, moderately densely punctured, margin very narrowly reflexed, sides not strongly arcuate, in the female slightly sinuate posteriorly, in the male evenly arcuate. Scutellum rather coarsely and sparsely punctate. Elytra with length to width as 1.2 to 1, surface densely and coarsely punctate, apices obliquely, truncately, rounded. Only the outer angles of tergite anterior to pygidium show from beneath the elytra. Length 1.5 to 2.3 mm.

For the relationships of *sericans* see under *pennatus*. In central and northern California specimens tend to be larger, darker and more robust than usual.

This species occurs (May-August) from Washington (Cooks) to southern California (San Diego) east to Nevada (Lovelock), Utah (Ogden, Wasatch), Arizona (Flagstaff, Williams, Globe) and New Mexico (Cloudcroft).

Cateretes (Cateretes) scissus spec. nov.

Plate 1, figs, 5, 6

Cateretes bipustulatus Payk. auct. in parte

Closely related to the European *pedicularis* L. but averaging a little smaller, antennal club a little more compact, and the second antennal segment subglobose instead of elongate in the female. Color a rich reddish brown or black; shining; a broad oblique band on each elytron, or in the black specimens a black v-shaped spot on the anterior part of the elytra and the rest of the elytra testaceous; clypeus, antennæ, and legs testaceous. Head closely, coarsely punctate; thorax coarsely but rather sparsely punctate, feebly alutaceous; elytra coarsely and more closely punctate than the thorax. Thorax with length to width as 1 to 1.7, lateral margins very narrowly reflexed. Thorax and elytra finely and sparsely pubescent, pygidium more strongly pubescent. Beneath finely punctate, sparsely pubescent. Length 2.1 mm., width 1.1 mm.

Holotype ♂ and allotype collected July 8, Edmonton, Alberta (F. S. Carr) in Mus. Comp. Zool. (H. C. Fall collection); paratypes Tewksbury, Mass. in M.C.Z. (Blanchard collection); one Tewksbury and another Mass. (S. Henshaw) specimen in the New England Museum of Natural History, Hopkinton, Mass. (Frost coll.); and several from Edmonton, Alberta (May 24–August 7) in the collections of the Univ. of California, Univ. of Kansas, C. A. Frost, and the writer.

This species has been recorded by Horn, 1879, under the name *bipustulatus* Payk., but it is really nearer to *pedicularis* Linn.

BOREADES genus nov.

Plates 1, 12

Cercometes auct. ex parte, Reitter, 1875, Verh. Nat. Ver. Brünn, p. 99. Genotype: *Cercus politus* Reitter.

Head much narrower than pronotum, front separated from clypeus by an incomplete transverse furrow. Antennæ with a distinct three-segmented club, the terminal segment bluntly sub-appendiculate at tip. Eye facets fine. Labrum transverse, not strongly emarginate, with truncately rounded lobes. Mandibles only slightly broadened with a single untoothed apex. Lacinia attenuate at tip, galea slender. Maxillary palpi rather long and thick; the apical segment not thicker than the others but as long as the second and third combined. Mentum not strongly transverse. First segment of labial palpi small, second about twice as long as the first and second combined. Pronotum not as broad as the elytra, the sides moderately arcuate, and the posterior angles obtusely but not broadly rounded. Scutellum large and bluntly triangular. The narrow epipleurae only along the anterior half of the elytra; pygidium free and rounded. Prosternal process narrow, subparallel, tip rounded, and extending to posterior margin of coxae. Mesosternal process twice as broad as the prosternal process, broadly rounded. Metasternum at middle about as long as first two ventral segments combined. Metepisternum pointed posteriorly. First ventral segment at middle as long as the second and third combined. Second segment short, third a little longer, fourth a little longer than the third, and the fifth a little longer than the fourth. In the male a broadly rounded dorsal segment appears behind the emarginate pygidium. The first three tarsal segments dilated, of equal length, the fourth segment very small, the fifth as long as the first two combined. Claws simple. Genotype: *Cercometes abdominalis* (Er.), described under *Cercus*.

Reitter says of *Cercometes* that the labial palpi are four-segmented (evidently assuming that the palpiger is a segment) and that the first three segments are minute, the claws are dentate, the clypeus by no means distinct, and the pygidium simple in both sexes. All of these characters necessitate separating *abdominalis* to form a new genus. *Boreades* seems to be intermediate between *Cateretes* and *Brachypterus* and rather close to *Heterhelus* in which Reitter placed *abdominalis* when he described the South American *politus*. Reitter subsequently made *politus* the type of his new genus *Cercometes*.

The genus *Boreades* contains one North American species. The adults have been collected by the writer on the blossoms of blackberry, *Rubus* (*Eubatus*) spp., and elderberry, *Sambucus canadensis*.

BOREADES ABDOMINALIS (Erichson)

Plate 1, figs. 13–21; pl. 12, fig. 2

Cercus abdominalis Erichson, 1843, in Germar, Zeischr. für die Ent., 4:229.
Cateretes abdominalis (Er.) auct.
Type: "North America", probably Pennsylvania in the Berlin Museum (Knoch Collection).

Oval, convex, metallic blue-green, shining, antennæ, abdomen, and legs rufous, antennal club piceous. Head, pronotum and elytra very feebly pubescent; underside and abdomen more strongly pubescent. Head densely punctate. Thorax convex; width to length as 1.6 to 1; base a little wider than the apex; sides moderately arcuate, narrowly reflexed, feebly sinuate near the subrectangular basal angles; surface equally punctate, punctures moderately coarse not dense. Scutellum bluntly and broadly rectangular, moderately densely punctate. Length to width of elytra conjointly as 1.1 to 1, sides feebly arcuate, narrowly reflexed, convex, a little more coarsely and densely punctate than the pronotum. Prosternum densely and coarsely punctate, body beneath less so, and abdomen still less so. Length 2-3 mm.

This species is found (April-August) from eastern Canada to Georgia (Clayton) west to Texas (Dallas), Missouri, Nebraska (Lincoln), Kansas (Argentine, Muncie, Kansas Co.), Iowa (Burlington) and Manitoba (Aweme).

BRACHYPTERUS Kugelann

Plates 1, 12

Brachypterus Kugelann, 1794, in Schneider's Mag., **1**, 560. Genotype: *Dermestes urticae* Fab.

Virbius Des Gozis, 1886, Recherche de l'esp. typ., p. 11.

Head narrower than pronotum, front separated from the clypeus by an incomplete transverse furrow. Antennæ with a distinct but loosely connected club. Labrum transverse, not strongly emarginate. Mandibles not broadened on the outer side of the base, with a fine tooth near the apex. Lacinia and galea slender. Maxillary palpi rather long and thick; the apical segment thinner than the others and as long as the second and third combined. Mentum triangular, the anterior angle deeply emarginate. First and second segments of the labial palpi very small, the third large, subglobose, twice as long as the first two combined. Pronotum almost as broad as the elytra, sides more or less strongly arcuate; posterior angles obtusely rounded. Scutellum large, triangular. Epipleuræ narrow, not extending half way posteriorly. Pygidium free and rather acutely rounded. Prosternal process becoming broader posteriorly, truncate, not extending beyond the coxæ. Mesosternal process not quite twice as broad as the prosternal process, broadly rounded. First ventral segment in the middle longer than the next two combined. Second and third of equal length, fourth longer, fifth much longer than the fourth. In the male a broadly rounded dorsal segment behind the feebly emarginate pygidium. Tarsi dilated, the fifth segment as long as the first three combined. Claws strongly dentate.

Brachypterus is intermediate between *Boreades* and *Heterhelus* on one hand and *Brachyleptus* and *Amartus* on the other. The Australian *Notobrachypterus*, placed by Grouvelle between *Brachypterus* and *Brachyleptus*, is unknown to the writer.

In Europe the larvæ and adults live in the flowers of nettles (*Urtica*) and pupation is in the earth.

The genus *Brachypterus* occurs in the Holarctic and Neotropical regions with one species in East Africa. Sixteen species are Palæarctic, four are Nearctic (one of which is Holarctic), and three are Neotropical. The genus seems to be ancient, since two species are restricted to the Canary Islands, another occurs on the Canaries and in southern Europe; one is found in Algeria, Sardinia, and Corsica; another in Algeria and the Balearics; a species occurs in Sardinia and the Canaries; and one in the Grenadines of the Lesser Antilles. Most of the species are restricted to arid regions but they cannot very well be called relicts of a time when the earth was generally arid, because the earth was probably never so arid as now.

1. Sides of pronotum meeting the base in a continuous curve, prothorax pale brown (Texas) . . . . *schaefferi*
   Sides of pronotum not meeting the base in a continuous curve, prothorax dark brown 2
2. Sides of pronotum usually not sinuate posteriorly (California) . . . . *troglodytes*
   Sides of pronotum usually sinuate posteriorly (Rocky Mountains eastward) 3
3. About 2.2 mm. long, sutural angles of elytral apices slightly rounded (Cordilleran region) . . . . *globularius*
   About 1.9 mm. long, sutural angles of elytral apices very slightly if at all rounded (Eastern States, Europe) . . . . *urticae*

BRACHYPTERUS SCHAEFFERI Grouvelle

Brachypterus rotundicollis Schaeffer, 1905, Sci. Bull. Brooklyn Inst. Mus., **1**, 146. (non *rotundicollis* Murray, 1864).

Brachypterus schaefferi Grouvelle, 1913, Ann. Soc. Ent. France, **81**, 387.

Type: No. 42560 collected in April at St. Tomas, Brownsville, Texas, in the U. S. N. M.

Oval, brownish, thorax paler, elytra with slight aeneous tinge, shining, sparsely pubescent. Head coarsely punctate. Antennae rufous. Prothorax, at its broadest part, as wide as the elytra at base, coarsely not very densely punctate, sides evenly arcuate, meeting the base in a continuous curve. Elytra more coarsely and densely punctate than the pronotum, apices truncate, sutural angles slightly rounded. Pygidium sparsely and obsoletely punctate. Prosternum in front with a few scattered punctures; metasternum coarsely punctate; abdomen obsoletely punctate, legs rufous. Length 1.5 mm.

Sharp, 1889, Biol. Centr.-Amer. Coleopt. 2:265, records specimens from Cordova, Mexico (400 miles south of Brownsville) as doubtfully *urticae*, because the pronotum was shaped as in *schaefferi*. Evidently *schaefferi* is an offshoot from *urticae* but a little more distinctly punctate.

This rare species is known (Jan., March, April, October) from Texas (Olmito, on stinging nettle, Victoria, and Brownsville at St. Tomas and Esperanza Ranch) and possibly Cordova, Mexico (B.M.).

BRACHYPTERUS TROGLODYTES Murray

Brachypterus troglodytes Murray, 1864, Trans. Linn. Soc. London, 24: 244. Type: from California in the British Museum.

Oval; convex; brown to black, usually piceous, with a slight aeneous tinge, antennae and legs rufous, sparsely finely pubescent. Head coarsely punctate except along an obscure, median, longitudinal line; also a shallow transverse furrow, enlarged at each end, between the eyes. Pronotum usually with the sides evenly arcuate but sometimes with a trace of sinuation posteriorly; surface sparsely, coarsely punctate. Elytra more sparsely punctate than the pronotum, apices nearly transversely truncate. Beneath alutaceous, the metasternum sparsely punctate; its epimeron more strongly alutaceous. Length 1.8-2 mm.

This species differs from *urticae* in that the sides of the pronotum are usually evenly rounded not sinuate, the pronotal punctations coarser, the clypeal suture more pronounced, the elytral humeri less pronounced, and the elytral apices more truncate.

This species occurs (March-August) from British Columbia (Victoria, and doubtfully Metlakatla), through Washington (Skokomish R. Tenino), Oregon, to southern California (Mono Lake, Los Gatos, Pomona, Pasadena), east to Arizona.

BRACHYPTERUS GLOBULARIUS Murray

Brachypterus globularius Murray, 1864, Trans. Linn. Soc. London, **24**, 245. Cotypes: from Connecticut and Mexico in the Laferte collection.

The location of this portion of the Laferte collection is unknown but may be in the Paris Museum or in the R. Oberthur collection at Rennes.

Very similar to *urticae* but larger, punctation coarser, and sutural angles of the elytral apices less obtuse. The metasternum sparsely, coarsely punctate; the epimeron less sparsely, more finely punctate, and strongly alutaceous. Piceous, antennae and legs paler. The types have not been seen, and Murray says the sides of the pronotum are evenly rounded. Yet in all the specimens I have seen the sides of the pronotum are sinuate posteriorly; so the types may be termed "atypical." In both *troglodytes* and *urticae* the pronotum may or may not be sinuate. The clypeal suture and elytral humeri are as in *urticae*. Length about 2.3 mm.

Specimens from northern California and British Columbia seem to intergrade with *troglodytes*, but *globularius* is usually larger, more strongly punctate, pronotum more distinctly sinuate.

This species was described from Mexico and Colorado, and Murray adds Connecticut but this is probably a mistake. Authentic specimens have been seen from Alberta (Edmonton), Colorado (Glenwood Springs), and California (Half Moon Bay) and specimens that are doubtfully this species from California (San Francisco, San Mateo, Alameda Co.) and British Columbia (Metlakatla). The dates run from April to August.

BRACHYPTERUS URTICAE (Fabricius)

Plate 1, figs. 22–28; pl. 12, fig. 3

Dermestes urticae Fabricius, 1792, Ent. Syst., **1**, 235.

Cercus pusillus Melsh., 1846, Proc. Acad. N.S. Philadelphia, **2**, 105.

Types: of *urticae* on *Urtica* in Germany (Helwig) and possibly in Kiel; of *pusillus* from Pennsylvania in M. C. Z. (Melsheimer collection).

Oval; convex; surface shining and very sparsely pubescent; piceous or brownish with a slight aeneous tinge, antennae and legs rufous. Sparsely, moderately coarsely punctate. Elytra slightly more sparsely and finely punctate than the pronotum, the apices variably truncate. Clypeal suture fine. Sides of the pronotum arcuate and posteriorly usually sinuate, but the sinuation may be absent and the sides almost parallel. Elytral humeri moderately prominent. Metasternum alutaceous, finely and sparsely punctate. Length 1.5—2 mm.

Murray, 1864, places the American specimens as a variety of *urticae* because the sinuation of the pronotum is evanescent, but this character is not at all constant. The relationships of *urticae* are discussed under the other species.

The adults are found on the flowers of nettles (*Urtica*).

This widespread species is found over most of the Palaearctic region and may possibly be introduced into North America, because in 1879 it was known only from the Atlantic states. Whereas at present it is known (June-September) from Ontario (Ridgway, Prince Edward Co.) and Quebec to Virginia, west to Missouri (St. Louis), Iowa, Wisconsin, north to Alberta (Edmonton) and British Columbia (Bear Lake, Kaslo) south to Washington (Seattle) and Colorado (Montrose, Placerville, La Veta, Garland, Powder River).

BRACHYPTEROLUS Grouvelle

Plates 1, 12

Heterostomus Jacq. du Val, 1858, Gen. Coleop. d'Eur., **2**, 136. (non Bigot, 1857, Diptera). Type: *Catheretes gravidus* Ill. = *Brachypterolus pulicarius* (L.).
Brachypterolus Grouvelle, 1913, Ann. Soc. Ent. France, 1912, **81**, 387.

Head much narrower than pronotum; no visible line between the clypeus and front. Antennae with a distinct three-segmented club, the terminal segment sub-appendiculate at tip. Labrum transverse, weakly emarginate. Mandibles broad, untoothed, with long tips. Lacinia terminating in a point which is bent inwards almost at right angles, a tuft of hair on each side of the point; galea very slender and doubtfully glabrous. Maxillary palpi short and thick, the apical segment thinner and shorter than the second and third combined. Mentum small, very strongly transverse, anterior angles very broadly rounded. First segment of labial palpi rather large, the second rather long and slender, the apical segment large, clavate, longer than the first two combined. Pronotum very nearly as broad as the elytra, posterior margin on each side broadly emarginate. Scutellum large, triangular. Elytra with only a vestige of the epipleurae at the humerus; the sixth and seventh abdominal tergites visible from above. Pygidium truncate above the eighth dorsal segment in the male. Prosternal process parallel, narrow, and not extending posterior to the coxae. Mesosternal process emarginate, about three times as broad as the prosternal. Metasternum feebly emarginate posteriorly. First ventral segment, at middle, and fourth of equal length, either one longer than the second and third combined; fifth longer than the fourth. Tarsi dilated, with dense, long hairs beneath, the fourth tarsal segment very small, the fifth as long as the first two combined. Claws toothed.

Grouvelle (1913) places *Brachypterolus* between *Amartus* and the aberrant Oriental *Chalonccrus*. I believe *Brachypterolus* is nearer to *Brachypterus* than to *Amartus*.

In Europe the larvae feed on the pollen of *Antirrhinum* and *Linaria* (Scrophulariaceae) and pupate in the earth. In America the larvae appear to breed only in the seed capsules of *Linaria*, but the adults are found on the flowers of many plants. See Cornelius, 1863, Stett. Ent. Zeit. pp. 113-115; Perris, 1877, Larves des Coleop. pp. 35-36, fig. 23-26; and the references given below.

Until recently *Brachypterolus* (8 species) was confined to the Palaearctic region. About 1918 the following European species was introduced into eastern United States.

BRACHYPTEROLUS PULICARIUS (Linn.)

Plates 1, figs. 29–35; pl. 12, fig. 4

Dermestes pulicarius Linn., 1758, Syst. Nat., ed. 10, **1**, 357.

Brachypterolus mordelloides Notman, 1920, Journ. N. Y. Ent. Soc., **28**, 29–30.

Heterostomus pulicarius (L.) Britten, 1922, Journ. Econ. Ent., **15**, 311; 1924, 24th Rept. State Ent. Conn., p. 339; Hatch, 1924, Tech. Pub. N. Y. State Coll. Forestry, **24**, 297.

Brachypterolus pulicarius (L.) Schaeffer, 1927, Bull. Brooklyn Ent. Soc., **22**, 170; Hervey, 1927, Journ. Econ. Ent., **20**, 809–814, fig. 381; Hatch, 1928, Journ. N. Y. Ent. Soc., **36**, 35–36.

For complete synonymy vide Grouvelle, 1913.

Types: of *pulicarius* from Europe presumably in the collection of the Linnaean Society of London, of *mordelloides* from Keene Valley, New York in the collection of Howard Notman.

Oval; convex; shining black, antennae and legs pale to dark piceous. Rather thickly covered with long brownish to grey pubescence. Head, pronotum, scutellum, and elytra coarsely and closely punctate; abdomen above and below more finely punctate; metasternum coarsely punctate. Prothorax strongly emarginate in front, sides moderately arcuate, narrowed in front, hind angles rectangular. The legs, from fore to hind pair, are progressively darker. Length 1.8—2.5 mm.

Notman, 1920, separated the American specimens by description only. I am unable to discern any differences between specimens from the Old and New World.

Judging from its distribution, *pulicarius* seems to have been introduced first into eastern Canada, although the earliest record the writer knows about is in 1918 at Keene Valley, Essex Co., New York. Since then it has been collected (May-August) from Ontario (Prince Edward Co.) Quebec (Gaspé), and Nova Scotia (Bass River) south to Pennsylvania (Norwood), west to Iowa and Wisconsin. It is found generally over Europe and Siberia, where several varieties have been described on the basis of size and color of pubescence. Size is of no importance, but pubescence color is sometimes distinctive.

This species breeds in the United States in *Linaria*, is sometimes injurius to *Fragraria*, and the adults may be found on the flowers of dandelion, buttercup, wild mustard, clover, apple, and panicled dogwood.

AMARTUS Leconte

Plates 2, 12

Amartus Lec., 1863, Proc. Acad. N. S. Philadelphia, p. 343. Genotype: *Amartus rufipes* Lec.

Brachyleptus Motsch., 1870, (non 1845), Bull. Soc. Imp. Moscow, **42**, pt. 2, pp. 352–4. Type of the 1870 description is *Strongylus tinctus* Mann.

Pronotum more than one and one-half as broad as the head, front separated from the clypeus by a long but incomplete transverse furrow. Antennae with a distinct but loose three-segmented club, the terminal segment sub-appendiculate at tip. Labrum transverse, broadly emarginate. Mandible with a single, untoothed, rather blunt apex. Lacinia not attenuate, tip bent inwards almost at right angles. Galea slender, with an enlarged hyaline vesicle at tip. Maxillary palpi long and thick, the apical segment slenderer but as long as the second and third combined. Mentum not strongly transverse. First segment of labial palpi rather large, third attenuate apically, about as long as the second. Pronotum nearly as broad as the elytra, posterior angles broadly rounded. Scutellum large, more or less trapezoidal, mostly covered by the pronotum. Elytra rather short, exposing the penultimate tergite. The narrow epipleurae only along the anterior half of the elytra. Prosternal process very narrow, reflexed, extending to posterior margin of coxae. The mesosternal process about five times as broad as the prosternal, emarginate; mesocoxae farther apart than the metacoxae. Metasternum divaricate posteriorly. First ventral segment at middle as long or longer than the second and third combined; the fourth as long as the second and third combined. In the male a dorsal segment appears behind the truncated pygidium. First three tarsal segments broadly dilated, the fourth small, the fifth almost as long as the first four together. Claws simple, merely with the usual dilation.

Amartus occupies the dry regions of the southwest as its very close relative *Brachyleptus* Motsch. inhabits the dry Mediterranean region. It is evidently very close to *Brachyleptus*, differing in the shape of the mentum, labial palpi, pronotum, and claws. *Amartus* is further removed from *Brachypterus* and differs in the shorter elytra, simple claws, and differently shaped mentum, labial palpi, and mandibles. In North America the adults feed on the pollen of certain Leguminaceae and Acanthaceae.

The genus *Amartus* is restricted to extreme western North America and southwestern Asia. Three of the six known species have been examined in the writer's collection.

Key to the species of AMARTUS

Form very robust, thorax very convex, apex distinctly narrower than the base . . . . *tinctus*
Form less robust, thorax moderately convex, not narrower at the apex . . . . *rufipes*

AMARTUS TINCTUS (Mannerheim)

Strongylus ? tinctus Mann., 1843, Bull. Soc. Imp. Moscow, **43**, 255.
Brachypterus ferrugatus Murray, 1864, Trans. Linn. Soc. London, **24**, 250.
Types: of *tinctus* from California, presumably in the Zoöl. Mus. at Helsinki; of *ferrugatus* from Oregon in the British Museum. A cotype of *tinctus* is presumably in the Boheman collection in the Naturh. Riksmus. at Stockholm.

Oval; robust; subopaque; moderately thickly clothed with long, greyish pubescence; color varying from dark piceous with fuscous antennae and legs to entirely testaceous. Head coarsely and very thickly punctate, pronotum less coarsely as thickly punctate, elytra more coarsely and sparsely punctate than the pronotum. Thorax with width to length as 1.3 to 1, apex a little narrower than the base and very feebly emarginate, sides feebly arcuate, hind angles broadly rounded, base broadly rounded and slightly sinuate on each side, disc convex. Elytra conjointly as wide as long, slightly narrowed toward apex, apices truncately rounded; a feeble scutellar depression. Abdomen above and below densely, finely punctate; metasternum more coarsely and less densely punctate. Length 3.9—5.5, width 1.7—2.2 mm.

This species is found (April-June) from Oregon to San Diego Co., California east in southern Arizona to the Chiricahua Mts.

AMARTUS RUFIPES Leconte

Plates 2, figs. 1–11; pl. 12, fig. 5

Amartus rufipes Leconte, 1861, Proc. Acad. N. S. Philadelphia, p. 344.
Brachyleptus lateralis Motsch., 1870, Bull. Soc. Imp. Moscow, **42**, pt. 2, pp. 352–4.
Types: of *rufipes* from Mendocino, Calif. (A. Agassiz) in the M.C.Z. (Leconte collection); of *lateralis* from central Calif., presumably in the Zoöl. Mus., Univ. Moscow.

Oblong oval; moderately convex; covered with long, rather sparse, cinereous pubescence. Head, pronotum, and scutellum black; elytra varying from black with ferrugineous sides to entirely ferrugineous. Abdomen above varying from dark piceous to ferrugineous. Beneath piceous, antennae and legs ferrugineous, posterior femurs piceous. Densely punctate all over, coarsely punctate on head and pronotum, a little less coarsely punctate on elytra, and still less coarsely punctate on the pygidium and beneath. Pronotum with length to width as 1 to 1.4, only slightly narrowed in front; hind angles and base very broadly rounded. Elytra conjointly a little longer than wide, wider than the pronotum, narrowed a little anteriorly. Length 3.2—4 mm.

In addition to the characters given in the key, *rufipes* differs from *tinctus* in averaging a little smaller and never being entirely testaceous.

This species ranges (April-June) from San Francisco to southern California east into Arizona.

ANTHONAEUS Horn

Plates 2, 12

Anthonaeus Horn, 1879, Trans. Amer. Ent. Soc., 7, 273–274. Genotype: *Colastus agavensis* Crotch.

Head much narrower than pronotum, front separated from the clypeus by an incomplete transverse furrow. Antennae with an indistinct three-segmented club, the terminal segment conical and subappendiculate at tip. Labrum transverse, strongly emarginate, with broadly rounded lobes. Mandibles broadened on the outer side of the base and a large blunt tooth on the inner margin. Lacinia terminating in a point which is bent inwards almost at right angles, a tuft of hair on each side of the point; galea is very slender and glabrous. Maxillary palpi short and thick; the apical segment thicker and longer than the first, second, and third combined. Mentum strongly transverse, anterior angles broadly rounded. First segment of labial palpi very small, second short and clavate, the apical segment as long as the other two segments combined. Pronotum not as broad as the elytra; the sides and posterior angles broadly and evenly rounded. Scutellum large, triangular. Elytra anteriorly with broad epipleurae which abruptly narrow posteriorly; pygidium free and broadly truncate. The prosternal process parallel, narrow, and not extending beyond the coxae. The mesosternal process twice as broad as the prosternal process, truncate; metasternum about as long as the first three abdominal segments combined. First ventral segment, in the middle, not as long as the second and third combined; second and third short; fourth as long as second and third combined; and fifth as long as third and fourth combined. In the male a large obliquely truncate dorsal segment behind the emarginate pygidium. Tarsi dilated, the fifth as long as the preceding three combined. Claws simple.

Anthonaeus is evidently a depressed *Amartus*, but varies in so many minor points as to necessitate separating the two genera.

The adults are found in the flowers of *Agave;* so the larvae probably live in the seed capsules.

The genus *Anthonaeus* contains only a single species which occurs in southern California.

ANTHONAEUS AGAVENSIS (Crotch)

Plates 2, figs 13–22; pl. 12, fig. 6

Colastus agavensis Crotch, 1874, Trans. Amer. Ent. Soc., **5**, 76.

Type: from California, no. 8313 and 4 paratypes in the M.C.Z. (Leconte collection).

Oblong oval; depressed; usually ferrugineous, sometimes black, but the elytra always testaceous. Head, pronotum, and elytra moderately punctate, sparsely pubescent. Prothorax with width to length as 1.5 to 1; sides strongly and evenly arcuate, lateral and posterior margins very narrowly reflexed. Scutellum moderately punctate. Pygidium and preceding segment exposed, more closely punctate and more thickly pubescent than the elytra. Pygidium with reflexed margins; in the male emarginate for the reception of the oval, slightly concave additional segment. Elytra conjointly a little longer than wide, becoming broader posteriorly. Prothorax beneath minutely and sparsely punctate. Metasternum coarsely punctate laterally, and the ventral segments moderately punctate. Length 3.8—4.5, width 1.8—2 mm.

This species is found (March 26-June) in the flowers of *Agave* along the coastal region of California from Santa Barbara Co. to San Diego Co.

CARPOPHILINAE

Carpophinae Er., 1843, in Germar, Zeitschr. für Ent., **4**, 226 et 233.

This subfamily contains 31 genera of which four occur in the Nearctic region. Grouvelle placed Meligethinae between Cateretinae and Carpophilinae. But the Meligethinae are most closely related to the Nitidulinae and since there are gradations between the Carpophilinae and the latter, the Meligethinae will have to be placed after the Nitidulinae. Gauglebauer placed the Meligethinae in the Nitidulinae and the present writer is strongly inclined to agree with him. More of the exotic genera will have to be dissected, however, before a definite opinion can be formed.

Key to genera of Nearctic Carpophilinae

1. Body very elongate 2
   Body at most oblong 3
2. Body convex, hypopygidium and pygidium long, conical . . *Conotelus*
   Body depressed, hypopygidium and pygidium short, depressed . . . .
   .... *Brachypeplus*

3. Ventral segments 1-4 short, fifth as long as the other combined. . . . . *Colopterus*
Ventral segments 2-3 short, first, fourth, and fifth longer. . . . . *Carpophilus*

CONOTELUS Erichson

Plates, 3, 12

Conotelus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 249. Genotype: *Stenus conicus* Fabr.

Narrow, convex, elongate, tapering posteriorly. Head nearly as broad as the pronotum. Clypeus indistinct, slightly porrect, margined by a depression on each side. Eyes large and projecting. Antennae scarcely so long as the head with a large flattened club of globular outline. Antennal grooves long and slightly or strongly convergent. Labrum short, transverse, very feebly emarginate. Mandibles sharp at tip; two or three small teeth behind the tip. Lacinia short and rounded at apex. Maxillary palpi short and thick, first segment small, second and fourth about of equal length, much longer than the third. Ligula with small paraglossae, the palpi robust, first segment very small, second and third large and very thick. Mentum strongly transverse, feebly emarginate in front. Pronotum nearly as broad as the elytra. Scutellum broadly rounded posteriorly. Epipleurae broad and almost the elytral length. Elytra abbreviated, exposing the last three dorsal segments. The first two ventral segments short, of equal length; the next two segments longer, of equal length; the last segment very long, almost as long as the rest combined. Prosternal process produced behind the coxae. Meso- and metaxocae about equally separated, nearly twice as much as the procoxae. An additional tubular segment in the male. Legs short, femurs feebly canaliculate. Tarsi dilated, the fifth segment about as long as the first four. Claws simple.

Conotelus is much more closely related to *Colopterus*, and to *Brachypeplus* in particular, than to *Carpophilus*, next to which Grouvelle placed it. In fact *Conotelus* grades imperceptibly into *Brachypeplus*. Its exact relationships cannot be stated until more exotic genera have been dissected.

The genus *Conotelus* comprises about 23 species, all but one confined to the tropical and subtropical regions of the New World. Four species are found in the United States, one of which extends into eastern Canada.

Key to species of CONOTELUS

1. Abdomen acutely margined. Head prolonged behind the eyes. Sides of thorax posteriorly sinuate . . . . *stenoides*
   Abdomen slightly if at all margined. Head very slightly prolonged behind the eyes. Sides of thorax not sinuate posteriorly 2
2. Pronotum not rugulose, finely granular between the punctures . . . . *punctatus*
   Pronotum distinctly and finely rugulose between the punctures . . . 3
3. Tibiae testaceous (Rocky Mts. eastward) . . . . *obscurus*
   Tibiae almost always piceous (southwestern United States and Middle America) . . . . *mexicanus*

CONOTELUS STENOIDES Murray

Conotelus stenoides Murray, 1864, Trans. Linn. Soc. London, **24**, 338.
Type: from Panama (Motschulsky) in the British Museum.

Elongate, subdepressed, sparsely pubescent, color varying from brown to black. Head finely, subrugulosely punctate. Prothorax as wide as long, sides very feebly arcuate, abruptly sinuate at the posterior angles. Margin moderately prominent and more or less distinctly crenulate, surface subrugosely, closely, variolose. Scutellum strongly transverse. Elytra conjointly with width to length as 1.1 to 1, finely striate, intervals with a row of shallow, coarse punctures, each bearing a semierect hair, surface finely, subgranularly alutaceous. Abdomen acutely margined, alutaceous, and sparsely punctate; pygidium in the male truncate, not emarginate. Prosternum rugulose. Antennae and legs testaceous, antennal club fuscous. Length 3.5–4 mm.

This species occurs (March-November, mainly April and May) from Florida (many localities) through Alabama (Kushla), Louisiana (Vowell's Mill, Winfield) to Oklahoma (Ada) and eastern Texas (many localities) south through Mexico (Vera Paz, Cordova, Jalapa), Guatemala (S. Geronimo), Nicaragua (Chontales), to Panama (Bugaba, Volcan de Chiriqui).

CONOTELUS PUNCTATUS Schaeffer

Conotelus punctatus Schaeffer, 1911, Journ. N.Y. Ent. Soc., **19**, 116.
Type: from Lake Worth, Florida (O. Dietz) in the U.S.N.M.

Elongate, moderately convex, sparsely pubescent, piceous with pale brown elytra. Head subrugosely, subgranularly, moderately closely punctate. Prothorax with width to length as 1.3 to 1, sides feebly arcuate, slightly narrowed anteriorly, lateral margins very narrow, smooth, posterior margin bisinuate, surface granular, sparsely but distinctly punctate. Elytra conjointly slightly longer than wide, surface finely granular with rows of punctures, each with a suberect hair. Abdomen sparsely punctate, pygidium in the male acutely emarginate. Prosternum finely alutaceous. Antennae and legs testaceous. Length 3.5–4.2 mm.

Evidently *punctatus* is intermediate between *stenoides* and *obscurus* and nearer the former. An apparently unnamed species, closely allied to *punctatus* but from British Guiana, is in the collections of the British Museum and the writer.

This species occurs, throughout the year but chiefly in the spring, in southern and central Florida (from Matecumbe Key to Lake County). Specimens from St. Thomas, Virgin Islands (B. M., Cambridge Univ. Mus.) are apparently identical.

CONOTELUS OBSCURUS Erichson

Plates 3, figs. 1–10; pl. 12, fig. 7

Conotelus obscurus Erichson, 1843, in Germar, Zeitschr. für Ent., **4**, 252.
Type: from "North America" (eastern United States), in the Knoch collection and from Zimmermann, in the Berlin Museum.

Elongate, moderately convex, sparsely pubescent, color varying from dark piceous to black, the elytra from light to dark piceous. Head subrugosely, sparsely punctate. Prothorax with width to length as 1.5 to 1, sides feebly arcuate, obliquely narrowed anteriorly, lateral margins very narrow, posterior margin feebly bisinuate, surface subrugosely, subgranularly, variolosely punctate. Elytra conjointly as long as wide, surface granular, closely, irregularly covered with rows of variolose punctures. Abdomen finely granular, sparsely punctate. Pygidium in the male acutely emarginate. Prosternum finely granular. Antennae and legs testaceous, the antennal club, often the coxae, and femurs fuscous or piceous. Length 3.5–4.5 mm.

This species is most nearly related to *mexicanus* from which it was probably derived. See under *mexicanus* for differences.

This species occurs (June-September) from Ontario (Ft. Erie) to South Carolina (Batesbury), Georgia (Rayburn Co., Clayton) west through Kentucky (Henderson) to Arkansas (Polk Co.), Kansas (Miami Co.), Iowa (many localities), north to Manitoba (Treesbank); also in Colorado (Denver).

CONOTELUS MEXICANUS Murray

Conotelus mexicanus Murray, 1864, Trans. Linn. Soc. London, **24**, 337.
Type: from Mexico (A. Sallé) in the British Museum.

Elongate, moderately convex, sparsely pubescent, uniformly dark piceous or black, the legs becoming somewhat paler towards their extremities, very rarely testaceous. Prothorax with width to length as 1.3 to 1, sides feebly arcuate, slightly narrowed anteriorly, lateral margins very narrow, posterior margin feebly bisinuate, surface finely, sparsely, longitudinally rugose. Abdomen narrowly margined, subrugosely, subgranularly punctate. Pygidium in the male shallowly emarginate. Prosternum subrugosely granular. Length 3.5–4 mm.

This species is closely related to *obscurus,* but the prothorax is a little narrower, the upper surface more opaque and more rugose, legs and elytra darker, and the male pygidium less deeply emarginate.

This species occurs (April-November) from southern California, Arizona (Prescott, Phoenix, Tempe, Stafford, Chiricahua Mts.), and Paris, Texas (not typical, legs testaceous) south through Lower California to Cape San Lucas and through Mexico, Honduras, Guatemala to Panama (Volcan de Chiriqui, Tobago Island).

BRACHYPEPLUS Erichson

Plates 3, 12

Brachypeplus Er., 1842, Arch. für Naturgesch., **8**, 148. Genotype: *B. planus* Er.
Nitidulopsis Walker, 1858, Ann. Mag. Nat. Hist., **2**, 206. Genotype: *N. aequalis* Walker.

Body elongate, usually depressed. Head not much narrower than the pronotum. Clypeus feebly emarginate in front, obscurely distinct; a vague fovea opposite the base of each antenna. Antennae a little longer than the head, first segment enlarged, the third elongate, the club flattened nearly round in outline. Antennal grooves short and slightly or strongly convergent. Eye facets very fine. Labrum broad, more or less indistinctly bilobed, sometimes with a notch on each side. Mandibles usually with two small teeth behind the apex. Lacinia rather short, rounded at tip, a brush of hairs on apex and inner margin. Maxillary palpi rather short and thick, first segment minute, the second unequal and large, about as long as the fourth, the third shorter than the second. Ligula large, with rather broad paraglossae. First segment of labial palpi very small, the second large and thick, the third subsecuriform. Mentum strongly transverse, more or less emarginate in front. Pronotum about as broad as the elytra, hind angles almost rectangular. Scutellum variable, more or less transverse. Epipleurae broad, reaching the elytral apices. Elytra much abbreviated, exposing the last three segments. First two abdominal segments of equal length, shorter than the next two, which are of equal length; the last longer than the preceding. Prosternal process may or may not be produced; in *glaber* it is greatly expanded beyond the coxae. Mesosternal process truncate. Mesocoxae and metacoxae equally separated, about twice as much as the procoxae. An additional transverse dorsal segment in the male. Tarsi feebly dilated; claws simple.

Brachypeplus seems to be nearer to *Cillaeus* than to *Colopterus*, next to which it was placed by Grouvelle. Its relationship to the peculiar Hawaiian genera is not clear to the writer. *Nitidulopsis* was synonymized by Grouvelle but may very well be a distinct genus.

The genus *Brachypeplus* is tropicopolitan, except that a few species extend southward through Australia into Tasmania. Only a single rare species is found in the United States.

BRACHYPEPLUS GLABER Leconte

Plates 3, figs. 11–17; pl. 12, fig. 8

Brachypeplus glaber Leconte, 1878, Proc. Amer. Philos. Soc., **17**, 398.
Type: collected by Hubbard and Schwarz, June 8, at Enterprise, Florida, no. 6961 in the M. C. Z. (Leconte collection).

Elongate; parallel; much depressed; glabrous; reddish brown, abdomen and metasternum dark piceous, antennal club dark rufous. Clypeus finely, sparsely punctate, finely granular. Rest of head moderately densely, coarsely punctate. Prothorax with width to length as 1.6 to 1, apex very feebly emarginate, sides nearly parallel, slightly narrowed in front, margin narrowly explanate posteriorly, hind angles rectangular, hind margin truncate, surface finely granular, moderately densely, coarsely punctate, except for a smooth median longitudinal line. Scutellum very sparsely punctate, finely granular. Elytra conjointly very slightly longer than wide, surface striate, striae finely punctate, intervals with rows of larger punctures, closely placed. Each elytron evenly truncately rounded. Abdomen above more finely, sparsely punctate than the pronotum, beneath more coarsely, densely punctate than above. Prosternum very sparsely punctate, the process strongly expanded behind the coxae and truncate. Length 3.3; width 1 mm.

This rare species occurs (May–July 17) in Florida (Dunedin, Capron, Lake Worth, Enterprise) and Georgia (St. Simon's Island).

COLOPTERUS Erichson

Plates 3, 12

Colopterus Er., 1842, Arch. für Naturgesch., **8**, pt. 1, p. 149. Genotype: *Nitidula rupta* Fab.

Colastus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 236.

Very flat and often broad. Head small, transverse, much narrower than the pronotum; no line or furrow separating the clypeus from the front. Antennae short, with a large, loose, oval club; antennal grooves short and convergent. Eye facets very fine. Labrum broad, bilobed. Mandibles usually with a large tooth on the inner margin. Lacinia broad and rounded at apex, usually heavily bearded. Maxillary palpus long, first segment small, the third often much shorter than the second, the fourth elongate and slender. Mentum strongly transverse, deeply emarginate. Ligula large, first segment of labial palpi small, second larger, third much larger and subsecuriform. Paraglossae very large and greatly expanded laterally. Pronotum about as broad as the elytra. Scutellum large. Epipleurae broad, reaching the elytral apices. Elytra abbreviated, exposing the last three dorsal segments. Last ventral segment recurved dorsally on the sides and in the male emarginate posteriorly. First four ventral segments of about equal length, the fifth about as long as the rest combined. Prosternal process small, barely extending beyond the coxae. Mesosternal process truncate, about three times the width of the prosternal process. In the male an additional dorsal segment. Anterior tarsi broadly, middle and hind tarsi less broadly dilated; last segment as long as first four combined. Claws simple.

Colopterus is most nearly related to *Carpophilus;* the differences mainly concern the abdominal segments and the additional segment of the male.

As may be inferred from the depressed shape of *Colopterus,* the members of this genus live under bark and feed on sap. A specimen of *C. truncatus,* in the writer's collection, was collected by H. B. Weiss in New Jersey in the shelf fungus *Polyporus graveolus.*

The genus *Colopterus* is confined to the New World where many species are known in the tropics and six species extend into or are confined to the United States.

The species of this genus are so variable that it is useless to enumerate many of the usual characters. Even those that are given are to be interpreted with latitude.

Key to species of COLOPTERUS

1. Hind angles of thorax distinct 2
   Hind angles of thorax obtuse, rounded . . . . *truncatus*
2. Scutellum smooth at tip 3
   Scutellum densely punctate, uniformly colored . . . . *unicolor*
3. Form broadly oval 4
   Form oblong, much depressed . . . . *semitectus*
4. Thorax with an oblique sulcus in each hind angle 5
   Thorax without sulcus, elytra maculate . . . . *maculatus*
5. Length 4–5 mm., black, each elytron depressed . . . . *niger*
   Length 3.5 mm., testaceous, each elytron broadly convex. . *gerhardi*

COLOPTERUS TRUNCATUS (Randall)

Nitidula truncata Randall, 1838, Boston Journ. Nat. Hist., **2**, 18.
Colastus infimus Erichson, 1843, in Germar, Zeitschr. für Ent. **4**, 245.
Colastus obliquus Leconte, 1858, Proc. Acad. N. S. Philad., p. 62.
Colastus limbatus Leconte, loc. cit.

Types: This species was described from specimens collected in Maine at sap under the bark of a prostrate sugar maple in spring. Randall's types have disappeared. There are, however, two specimens from Maine which may be autotypes in the T. W. Harris collection on deposit in the Museum of Comparative Zoölogy. The types of *infimus*, from North America, Porto Rico, and Brazil, are in the Berlin Museum. The types of *obliquus* (no. 6959) and *limbatus* (no. 6960), both from California on the Colorado River near the mouth of the Gila River, are in the M. C. Z. (Leconte collection).

Oblong oval, sparsely pubescent, color varying from piceous with a large oblique paler spot on each elytron to rufo-testaceous. In the dark specimens the antennae are fuscous and the legs rufous; in the pale specimens the antennae and legs are testaceous. Head moderately coarsely and densely punctate. Pronotum very feebly emarginate, very nearly twice as wide as long, surface rather densely, sparsely punctate. Elytra with width to length as 1.3 to 1, the apex of each elytron obliquely rotundo-truncate, densely punctate. Prosternum smooth; prosternal process much reduced. Last ventral segment only showing narrowly from above on each side of the pygidium. Length 1.5–2.7 mm.

Although the specimens from California and Arizona tend to be larger and darker than those of the east, the differences in the shape and punctation of the thorax and of color, on which Leconte and Murray separated several species, are entirely too variable, even in specimens from the type locality, to warrant separation. Murray (1864, p. 282) described *Colastus triangularis* from Brazil. This species will very likely turn out to be *truncatus*, particularly since some of the cotypes of Erichson's *infimus* were from Brazil.

For biology see under the genus. This species occurs (mainly April–July, also September, February and March) from Quebec to British Columbia (Terrace) south to Florida (Haulover) west to southern California, thence south through Middle America to Brazil. In the West Indies it is known from Porto Rico and Guadelupe.

COLOPTERUS UNICOLOR (Say)

Plate 12, fig. 9

Nitidula unicolor Say, 1825, Journ. Acad. N. S. Philad., **5**, 183.

Colastus obscurus Erichson, 1843, in Germar, Zeitschr. für Ent., **4**, 244.

Types: The type of *unicolor* is lost. It was collected in October under the bark of yellow pine presumably in southeastern United States. There is an autotype from North Carolina in the T. W. Harris collection on deposit in the Museum of Comparative Zoölogy. This specimen is here designated the neotype. The type of *obscurus*, collected in South Carolina by Zimmermann, is in the Berlin Museum.

Oblong to oblong oval, moderately depressed, subopaque, dark piceous to rufo-testaceous, finely and sparsely pubescent. Head with coarse confluent punctures. Prothorax with width to length as 1.6 to 1, feebly emarginate in front, sides feebly and evenly arcuate, narrowing anteriorly only slightly, base very feebly sinuate on each side, surface densely covered with large shallow punctures. Scutellum and elytra densely punctate; dorsal segments more sparsely punctate. Apex of each elytron rotundo-truncate. Prosternum very obsoletely punctate, the thorax and ventral segments rather densely, finely punctate. In the male the emargination of the hypopygidium is feebly bisinuate. Length 3–4.5, width 1.2–2 mm.

Some specimens from North Carolina, Florida, and Arkansas are aberrant in being smaller, narrower, and more parallel in shape than usual. But other differences cannot be found. A male from Jacksonville, Florida (U.S.N.M.) evidently represents a distinct species since it is much broader, more convex, more coarsely and sparsely punctate than *unicolor*. Another male from the Santa Rita Mts., Arizona

(U.S.N.M.) represents another species since it is testaceous, more convex, and more sparsely punctate than *unicolor*.

This species occurs (April–September) from New Hampshire to Florida (Enterprise, Tampa, Crescent City), west to Texas, Iowa, and Michigan (Detroit).

Colopterus semitectus (Say)

Nitidula semitecta Say, 1825, Journ. Acad. N. S. Philad., **5**, 182.
The type, from eastern United States, is lost.

Elongate oval; much depressed; very sparsely pubescent, the abdomen more pubescent; moderately shining; rufo-piceous; the elytra rufo-testaceous except along the lateral and posterior margins, which are rufo-piceous. The antennae and legs are rufous; antennal club fuscous. Head sparsely and coarsely punctate. Thorax with width to length as 1.9 to 1, anterior margin rather strongly emarginate, sides feebly arcuate, narrowed anteriorly, posterior margin feebly sinuate, surface alutaceous, with sparse, large, shallow punctures. Elytra more densely and feebly punctate than the thorax, the apices almost truncate. Prosternum very sparsely punctate, alutaceous. Emargination of the hypopygidium feebly bisinuate in the male. Length 3–4.5, width 1.2–1.9 mm.

This species occurs (March–August) from Ontario and Quebec (Montreal) to North Carolina west to Texas (Columbus, Dallas), Missouri, Nebraska, Iowa (Burlington), north to Lake Superior; also New Mexico (Albuquerque) and Oregon.

Colopterus maculatus (Erichson)

Colastus maculatus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 244.
Type: from North America (probably Pennsylvania) in the Berlin Museum (Knoch collection).

Broadly oval, depressed, moderately shining, sparsely covered with rather long testaceous pubescence. Above rufo-piceous, but the lateral margins of the pronotum, an oblique spot on the elytral humeri, and a spot on the inner two-fifths of each elytron extending from the anterior margin to near the apex (except the sutural margin) are rufous. There is also a rufous spot on the outer apical angle of each elytron. The long inner spot may be absent except at each extremity. Beneath light to dark rufous, antennal club fuscous. Head with coarse confluent punctures. Prothorax with width to length as 2.2 to 1, anterior margin emarginate, sides strongly narrowed anteriorly, base sinuate on each side, surface sparsely, coarsely punctate. Elytra more densely punctate than the pronotum; dorsal segments more sparsely and feebly punctate than the elytra. Prosternum sparsely punctate, smooth. Emargination of the hypopygidium bisinuate in the male. Length 4–5, width 2–2.5 mm.

One pair from Arizona in the Leconte collection is aberrant in being smaller than average, entirely testaceous, pygidium of the male emarginate in the middle, and punctation of the pronotum and dorsal segments much denser. But adumbrations of these differences are present in typical specimens. One from "N. Y." (U.S.N.M.), possibly introduced, is aberrant in being more depressed, more elongate, more parallel, and more obsoletely punctate than usual.

This species occurs (May–August) from New York to Florida (Orange Co.), west to Texas (Victoria, Dallas), north to Iowa (Mt. Pleasant); also Arizona (Leconte coll.).

Colopterus niger (Say)

Plate 3, figs. 18–25

Cercus niger Say, 1823, Journ. Acad. N. S. Philad., **3**, 195.
Colastus morio Er., 1843, in Germar, Zeitschr. für Ent., **4**, 242.
Types: Say's types are lost. They were collected in Missouri and Pennsylvania. The type of *morio*, from North America (presumably Pennsylvania) is in the Berlin Museum (Knoch collection).

Broadly oval, depressed, piceous black, moderately shining, very sparsely covered with short pubescence. Head coarsely and densely punctate. Prothorax with width to length as 2.1 to 1, apex feebly emarginate, sides feebly arcuate, strongly narrowed anteriorly, base sinuate on each side, a vague depression on each side of the scutellum, posterior angles rectangular and containing an oblique sulcus, disc sparsely, coarsely punctate. Elytra more finely and densely punctate than the pronotum; dorsal segments more densely and finely punctate than the elytra. Elytral apices separately evenly arcuate. Beneath piceous, antennae and feet rufous, antennal club fuscous. Prosternum obsoletely and rather densely punctate. Emargination of hypopygidium feebly bisinuate in the male. Length 4–5, width about 2.5 mm.

Heretofore this species has been known by Erichson's name, but Say's description is so definitely of this species that there is no alternative than to use his name.

This species occurs (April–September) from Washington, D. C. to

Florida (Enterprise) west to Ohio (Cincinnati), Illinois, south to Louisiana and Arkansas; also Panama (April 9, Alhajuelo, March 14, Porto Bello). Specimens in the U.S.N.M. from Costa Rica (San Pedro de Montes de Oca) and Colombia (Medellin) probably represent a different species since the pronotal disc is more obsoletely punctate and the sulci in the hind angles of the pronotum are absent. Another specimen from Costa Rica (U.S.N.M.) is similar to *morio* but has a more convex pronotum; it is labelled *punctiventris* Sharp.

COLOPTERUS GERHARDI Dodge

Colopterus gerhardi Dodge, 1939, Ent. News, **50**, 290-291.
Type: collected Oct. 7, 1909, under sycamore bark, at Olive Branch, Illinois by W. J. Gerhard, in the Field Museum of Natural History.

Broadly oval; depressed; nearly uniform testaceous brown; the head, scutellum, outer and apical elytral margins, and oval median thoracic spot vaguely darker; antennae testaceous at base, gradually darkening to the club; moderately shining; sparsely covered with short pubescence. Head moderately punctate. Thorax 2.25 times as wide as long, sides regularly arcuately narrowed to the apex, basal margin sinuate on each side, disc with a well defined sulcus extending medianly from the basal angles and continued by a vague depression which recurves to the basal margin, surface sparsely coarsely punctate. Each elytron broadly convex when viewed from the side or behind, each apex rotundo-truncate. Length 3.5, width 2.23 mm.

The above account is condensed from Mr. Dodge's excellent description. Mr. Dodge says that *gerhardi* is related to *morio* but differs in the convex elytral outline, in this respect approaching the Mexican *inflatipennis* Sharp.

The species is known only from the holotype.

CARPOPHILUS Stephens

Plates 3, 12

Carpophilus Stephens, 1830, Ill. British Insects, **3**, 50.
Genotype: *Dermestes hemipterus* Linn.
Tribrachys Leconte, 1861, Smiths. Misc. Coll., **1**, 83.
Genotype: *T. caudalis* = *C. decipiens* Horn.

Usually elongate, more or less depressed. Head broad but distinctly narrower than the pronotum. Clypeus indistinct, slightly porrect, margined by a depression at each side. Eyes usually large. Antennae a little longer than the head, first segment enlarged and often widened on the outside, second and third cylindrical, about of equal length, club compact, flattened, rounded or oval in outline. Antennal grooves moderately deep and convergent. Labrum bilobed, the lobes rounded. Mandibles usually with a large tooth on the inner side, behind the apex. Lacinia broad and rounded at tip. Maxillary palpi variable, rather short and thick, first segment small, the third usually shorter than the second. Ligula with rather large laterally projecting paraglossae; the palpi robust, first segment small, the next two about of equal length. Mentum more or less transverse, not strongly emarginate. Pronotum nearly or as broad as the elytra. Scutellum usually broadly rounded posteriorly. Epipleurae narrow to broad, extending about half the length of the elytra or to the apex. Elytra abbreviated, rarely exposing three, usually two abdominal segments. Ventral segments two and three very short; one, four, and five long. Prosternal process widened and rounded posteriorly, reaching the mesosternum. Mesocoxae and metacoxae about equally separated. An additional strongly deflexed segment in the male. Legs short, tarsi dilated. Claws simple.

Carpophilus is rather closely related to both *Colastus* and the Oriental *Tetrisus,* and serves to connect the *Carpophilinae* with the *Nitidulinae.*

Species of this genus occur most commonly in flowers and at sap under bark, less commonly in decaying or dried fruit and in fungi.

Approximately 130 species of this world wide genus are known, the great majority confined to the tropics.

In such a large genus some sort of grouping of the species is necessary. Murray recognized eight subgenera, but on such variable characters that most of them seem to be useless. The only subgenera here employed are *Urophorus* and *Carpophilus* s. str. Since the species could not all be keyed in order of their relationships, the numbers after the names in the key refer to the species as they are described. No one realizes more clearly than the writer how imperfect the key is. The most trustworthy characters are to be found in the male hypopygidium and the pygidium of the female.

Key to subgenera of Nearctic CARPOPHILUS

Elytra rather short, exposing three abdominal segments. . . *Urophorus*
Elytra longer, exposing two abdominal segments. . *Carpophilus* s. str.

Subg. UROPHORUS Murray

Urophorus Murray, 1864, Trans. Linn. Soc. London, **24**, 342.
Subgenotype: *Ips rubripennis* Heer.

This small subgenus is cosmopolitan and is usually shining, and nearly glabrous.

CARPOPHILUS HUMERALIS (Fabricius)

Nitidula humeralis Fab., 1798, Ent. Syst., Suppl., p. 74.
Brachypterus picinus Boheman, 1851, Insecta Caffraria, **1**, 560.
Carpophilus foveicollis Murray, 1864, loc. cit., p. 344.
Carpophilus rickseckeri Fall, 1910, Trans. Am. Ent. Soc., **36**, 124.
Types: of *humeralis*, from Cape of Good Hope, is unknown to the writer; of *foveicollis*, from Celebes, is in the British Museum; of *picinus*, from the Limpopo River, Africa, in the National Museum, Stockholm; of *rickseckeri*, from California, in the M.C.Z. (Fall collection).

Rather broadly oblong oval; convex; sparsely pubescent; brown to black, usually a small pale spot within the humerus of each elytron, legs rufous or rufo-piceous, antennae rufous, club piceous. Upper surface strongly shining, polished, alutaceous, sometimes alutaceous only towards the sides and elytral apices. Above coarsely punctate, more sparsely so on the pronotal disc. Beneath less shining and moderately densely punctate. Prothorax slightly more than one-half wider than long, arcuately narrowed in front, subparallel basally, not at all sinuate before the hind angles, which are a little obtuse and feebly defined. Elytra as wide as prothorax, one-sixth wider than long. Additional male segment deflexed but visible from above; pygidium of female longitudinally impressed at sides. Length 3.3–4, width 1.6–1.9 mm.

A world-wide species, *humeralis* is distributed in foodstuffs, and also damages growing corn. In the United States it is known (May, June, also September to March) from Georgia (Savannah), Florida (Sanford, Enterprise, Gulfport, Brooksville), California (Indio, San Diego, Vista, Tustin), Arizona (Yuma), and Utah.

CARPOPHILUS s. str.

1. Elytra more or less fimbriate 2
   Elytra not at all fimbriate 10

2. Mesosternum divided into two cells by raised spaces, between the front of which the prosternal process is accommodated...*hemipterus* (1)
Mesosternum not so divided, simple.........................3

3. Under 4.2 mm. long, form more or less oval.................4
Over 4.2 mm. long, elongate, parallel.........................9

4. Elytra dark testaceous to black.............................5
Elytra yellow-testaceous........................*pallipennis* (2)

5. Pronotum bicolorous.........................*nigrovittatus* (3)
Pronotum unicolorous...6

6. Pronotum rufous..8
Pronotum piceous..7

7. Pronotum strongly convex, sides feebly arcuate......*floralis* (4)
Pronotum less strongly convex, sides strongly arcuate..*longiventris* (5)

8. Elytra piceous or black.....................*melanopterus* (6)
Elytra rufous.......................................*rufus* (7)

9. Pronotum and elytra closely fimbriate..............*longus* (8)
No alternate.

10. An oblique, raised line cutting off the anterior angle of the metasternum, forming the "axillary space"...................24
Oblique, raised line on metasternum absent (just indicated in *sayi*)..11

11. Less than 3.6 mm. long......................................19
More than 3.6 mm. long...12

12. Length 4.5–6 mm., distinctly depressed.............*yuccae* (9)
Length usually less than 4.5 mm., moderately depressed......13

13. Form more oval than oblong..................................14
Form more oblong than oval.....................................15

14. Uniformly piceous to black above...................*sayi* (10)
Black above, each elytron with a large red spot..*californicus* (12)

15. Color black...................................*funebris* (15)
Color piceous..16

16. Pronotal margins lightly impressed before the posterior angles...*deflexus* (14)
Pronotal margin lacking such impressions....................17

17. Abdomen rufous..............................*rufiventris* (13)
Abdomen fuscous to piceous....................................18

18. Pronotum very slightly narrower at apex than at base, median impunctate pronotal line present .... *brevipennis* (17)
    Pronotum distinctly narrower at apex than at base, median impunctate pronotal line absent .... *lugubris* 11
19. Pronotal posterior angles broadly rounded, the angle itself very small and retracted ... .20
    Pronotal angles distinct, prominent, and not retracted........22
20. Elytra paler than the pronotum (rarely only slightly so)......21
    Uniformly dark piceous or black............. *brachypterus* (22)
21. Prosternum in front nearly smooth............. *discoideus* (23)
    Prosternum densely punctate.................. *decipiens* (24)
22. Pronotal margin broadly reflexed.................. *zuni* (25)
    Pronotal margin very narrowly reflexed..................23
23. Pronotum feebly convex, distinctly emarginate anteriorly.......
    .... *corticinus* (21)
    Pronotum convex, very feebly emarginate......... *obsoletus* (16)
24. Axillary space extending about one-fifth of the episternal suture..
    .... *tempestivus* (26)
    Axillary space extending at least one-third of the episternal suture...25
25. Axillary space extending about one-third of the episternal suture
   26
    Axillary space extending more than one-third of the episternal suture...27
26. Hind tibiae of male gradually widened.......... *dimidiatus* (18)
    Hind tibiae of male rather abruptly widened.... *floridanus* (19)
27. Uniform chestnut brown, convex.................. *nitens* (20)
    Elytra more or less rufous, with darkened apices............28
28. Pronotum widest at the acute posterior angles... *marginatus* (28)
    Pronotum widest at middle, hind angles obtuse.... *antiquus* (27)

1. CARPOPHILUS HEMIPTERUS (Linn.)

Dermestes hemipterus Linn., 1758, Syst. Nat., p. 358.
Vide Grouvelle, 1913, for full synonymy.
Type: Presumably in the collection of the Linnaean Society of London.

Oblong; feebly shining; sparsely pubescent; castaneopiceous, elytra with humeral spot and large irregular apical space testaceous, beneath rufo-testaceous. Head sparsely punctate. Prothorax one-third wider than long, sides very feebly arcuate, narrowing anteriorly, hind angles obtuse, disc with a vague impression on each side near the base, at center moderately densely punctate, more densely towards the sides. Elytra conjointly wider than long, more finely punctate than the pronotum; abdomen above still more finely punctate. Hypopygidium simple in the male; additional segment not visible from above; middle tibiae a little stouter than in the female. A suggestion of a carina on the female pygidium. Length 2–4 mm.

This species has been carried in foodstuffs all over the world. It is particularly abundant, at all times of the year, in tropical and subtropical regions. In the United States *hemipterus* occurs as far north as Massachusetts (Boston, Brookline), Illinois, Ohio (Columbus), Kansas, Colorado (Denver) and California (Santa Cruz Mts., Fresno).

2. CARPOPHILUS PALLIPENNIS (Say)

Plates 3, figs. 26–33; pl. 12, fig. 10

Cercus pallipennis Say, 1823, Journ. Acad. N. S. Philad., **3**, 194.

Carpophilus pallipennis var. *pollens* Sharp, 1889, Biol. Centr.-Amer., Col., **2**, 300.

Types: of *pallipennis* from eastern Colorado, near the Rocky Mountains, is lost; of *pollens*, from northern Mexico, is in the British Museum.

Oblong oval; robust; sparsely pubescent; piceous, elytra, antennae, and legs testaceous, antennal club fuscous. The parts that are piceous may be rufo-testaceous except for the metasternum, scutellum, and disc of the pronotum. Head sparsely punctate. Prothorax with width to length as 1.4 to 1, convex, narrowed in front, sides moderately arcuate, hind angles broadly rounded, surface densely punctate. Elytra conjointly with width to length as 1.2 to 1, surface regularly, densely punctate. Abdomen above more finely and sparsely punctate than the elytra. Prosternum nearly smooth. In the male the hypopygidium has a depression preceded by a bare space, the additional segment visible from above, middle and hind legs stouter than in the female. In the female a sharp point may or may not be present near the posterior margin of the pygidium. Length 2.5–4 mm.

Sharp's variety was based on a variation in the ventral depression of the male, and variations in size and color. These differences have no geographic relationships and seem to indicate no definite evolutionary tendency; so the var. *pollens* should be synonymized.

This species is abundant on the flowers of prickly pear (March–July) New York to Medicine Hat. Alberta south to Florida and Lower California into Mexico (San Pedro in Coahuila, Chihuahua City, Hidalgo).

3. CARPOPHILUS NIGROVITTATUS spec. nov.

Oblong, feebly shining, sparsely covered with yellow pubescence. Anterior portion of head and antennae testaceous, rest of head black; pronotum above testaceous to rufous with a median longitudinal stripe of black, about one-fourth the width of the pronotum; scutellum black; elytra black with sides and rarely a narrow posterior margin testaceous; abdomen above dark rufous to black; beneath testaceous, except that the metasternum or most of the venter may or may not be black. Prothorax with width to length as 1.5 to 1, convex, narrowed in front, sides evenly moderately arcuate, hind angles broadly rounded, surface densely, rather coarsely punctate, very finely and obsoletely granulate. Elytra conjointly with width to length as 1.2 to 1; sides evenly, feebly, but distinctly arcuate, very finely fimbriate; surface distinctly and finely granulate, as coarsely but more sparsely punctate than the pronotum. Abdomen above more finely and sparsely punctate than the elytra. Prosternum sparsely punctate. In the male the hypopygidium has a very shallow round depression preceded by a smooth space, the additional segment visible from above; legs about equally stout in both sexes. Female pygidium is moderately convex posteriorly. Length 3.7–4.2 mm.; width 1.7–1.9 mm.

This species is closely related to *pallipennis*, but is differently colored, lateral margins of elytra evenly arcuate not straight at middle, pronotum and elytra more coarsely and sparsely punctate, pronotum slightly less convex and proportionately broader.

Holotype (♂), allotype, and two paratypes from Arizona in the collection of the University of California, Berkeley. One paratype from Pyramids, Mexico, June 9, 1935 at the University of California; one paratype Pyramids, Mex. and one from Arizona in the writer's collection. One of the Mexican specimens has the elytra entirely testaceous.

4. CARPOPHILUS FLORALIS Erichson

Carpophilus floralis Er., 1843, in Germar, Zeitschr. für Ent., **4**, 261.
Type: from Mexico (Chevrolat) in the Berlin Museum.

Oblong oval; robust; sparsely pubescent; uniformly fuscous, the elytra and legs slightly paler. Head densely punctate. Prothorax with width to length as 7.5 to 5, convex, sides very feebly arcuate, narrowed in front, hind angles broadly rounded, surface finely granular, densely punctate. Elytra conjointly with width to length as 8.2 to 7, irregularly, sparsely punctate and finely granular. Elytral fimbriae usually distinctly present but short. Abdomen above as coarsely but more closely punctate than the elytra. Prosternum finely, sparsely punctate. In the male a minute depression just preceding the posterior margin of the hypopygidium; additional segment visible from above. In the female the pygidium produced to a variable degree into a point preceding the hind margin. Length 2.5–3.5 mm.

This species is closely related to *pallipennis* but differs in the more convex, more coarsely and densely punctate pronotum, the more distinctly granular surface and the uniformly fuscous color. From *longiventris, floralis* differs in the more convex pronotum, less arcuate pronotal sides, and in the secondary sexual characters.

This species occurs on the flowers of prickly pear from New York (Staten Island) and New Jersey south to Florida (Key West, Enterprise, Capron) west to Kansas (Belvidere), Oklahoma (Fort Cobb), New Mexico (Wooten), and Texas (Dallas, Victoria, Denton, Arlington), south into Mexico (Mexico City, Esperanza, Jalapa, Cordova, Guanajuata). In the north *floralis* is found in June, in the south from March to August. Specimens from Brownsville, Tex. (U.S.N.M.) are aberrant in having the pronotum more coarsely punctate, the head dark piceous, disc of pronotum fuscous, and the rest rufo-testaceous.

5. Carpophilus longiventris Sharp

Carpophilus longiventris Sharp, 1889, Biol. Centr.-Amer., Col., **2**, 301.
Type: male from Ventanas, Durango, Mexico (Hoge) in the British Museum.

Oblong oval; robust; sparsely covered with long, yellow pubescence; rufo-piceous; elytra dark testaceous; antennae, legs and abdomen rufous; posternal process, mesosternum, and metasternum dark piceous. Head densely, coarsely punctate. Prothorax with width to length as 1.4 to 1, convex, sides evenly arcuate, feebly sinuate behind the hind angles so that the hind angles are just evident, surface finely granular, moderately densely punctate. Elytra conjointly with width to length as 1.1 to 1, punctate like the pronotum. Abdomen above more finely, sparsely punctate than the elytra. Prosternum very sparsely punctate. In the male the hypopygidium has a fovea at the hind margin and on each side of this a polished transverse tubercular elevation; additional segment visible from above and produced downward; hind tibiae not enlarged but more curved than in the female. In the female the pygidium is somewhat recurved and often produced into a point at or near the hind margin. Length 3.2–4 mm.

Evidently *longiventris* is closely related to *pallipennis* but the pronotum is less convex, pronotal sides more arcuate, and the pronotal punctuation more sparse. The best difference is in the male hypopygidium. One female from Oak Creek, Arizona (Kansas Univ. coll.) is aberrant in being darker, more coarsely and densely punctate, and pronotal sides less arcuate. A male from Texas (U.S.N.M.) differs in having less arcuate pronotal sides, the hypopygidium more simple, and the eighth segment not produced downward.

Aside from the type locality in Mexico, *longiventris* has been collected on *Yucca elata* (April–August) in Lower California, "Cal.", Arizona (Pinal Mts., Catalina Springs, Santa Rita Mts., Huachuca Mts., Chiricahua Mts.) and the aberrant specimen from Texas.

6. CARPOPHILUS MELANOPTERUS Erichson

Carpophilus melanopterus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 262.
Type: from South Carolina (Zimmermann) in the Berlin Museum.

Oblong oval; sparsely covered with fine pubescence; bright rufous except for piceous or black elytra and black antennal club. Head and pronotum densely, variolosely punctate. Prothorax with width to length as 1.8 to 1, sides very feebly arcuate, narrowing anteriorly, abruptly sinuate before the hind angles and sinuate behind the hind angles. Elytra conjointly a little wider than long, broadening posteriorly, humeri and apices sometimes rufescent, more densely and finely punctate than the pronotum. Dorsal segments more sparsely punctate than the elytra. Prosternum finely punctate. In the male a large, vague, semicircular impression before the hind margin of the hypopygidium; additional segment not visible from above. In the female a blunt carina on the pygidium. Length 3.2–4.5 mm.

This species occurs in the flowers of *Yucca* (May–July) from New York (Rye), New Jersey (Bergenfield), and Illinois to Florida, west to Iowa (Lee Co.), Texas (Dallas), south into Mexico.

7. CARPOPHILUS RUFUS Murray

Carpophilus rufus Murray, 1864, Trans. Linn. Soc. London, **24**, 371.
Type: from Mexico in the Paris Museum.

This species is usually considered a variety of *melanopterus*. It is similar to that species, but averages larger, the elytra are rufous, the pronotum somewhat more finely and sparsely punctate, the antennal club fuscous not black, and the underside entirely rufous. Length 4–5 mm. Also the pronotum and sutural margins of the elytra tend to become fuscous and the elytra to become testaceous. This tendency is similar to that which is achieved in *pallipennis*. Dodge (Ent. News, 50: 291) indicates an ecological differentiation between *melanopterus* and *rufus* by stating that *rufus* is found on cactus blossoms whereas *melanopterus* occurs on flowers of yucca. There is, however, one specimen from Dallas, Texas (U.S.N.M.) colored like *melanopterus* and recorded from *Yucca,* but punctate like *rufus;* so perhaps *rufus* should be placed as a subspecies of *melanopterus.*

This species occurs on the flowers of prickly pear (*Opuntia*) from May to July, South Dakota (Rapid City) through Kansas (Reno Co., Medora, Rago), Nebraska (Pine Ridge, Meadville), Utah (Arch Canyon), Oklahoma (Texas Co., Noble Co.), Colorado (Denver, Las Animas), "Cal.", New Mexico (Moses), Texas (Dallas), into Mexico (Vera Cruz, Jicaltepec).

8. Carpophilus longus Fall

Carpophilus longus Fall, 1910, Trans. Amer. Ent. Soc., **36**, 123.

Type: collected June 6, 1891, Santa Rita Mts., Arizona in the M.C.Z. (Fall collection).

Elongate; parallel; convex; sparsely pubescent; piceous; antennae, legs, abdomen beneath, and usually the elytra dark rufous. Head and pronotum densely punctate, elytra more finely and less densely punctate than the pronotum, and the abdomen more finely and less densely punctate than the elytra. Prothorax with width to length as 1.4 to 1, sides very feebly arcuate, very slightly narrowed in front, hind angles broadly rounded. Prosternum obsoletely punctate. In the male the hypopygidium is simple; the additional segment not visible from above. In the female there is a vague suggestion of a carina on the pygidium. Length 4.2–5, width 1.5–1.8 mm.

This species has been collected (April–June) in leaves of *Yucca macrocarpa* only in southern Arizona (Santa Catalina Mts., Santa Rita Mts., Chiricahua Mts.).

9. Carpophilus yuccae (Crotch)

Colastus yuccae Crotch, 1874, Trans. Amer. Ent. Soc., **5**, 75.

Type: from the unopened flower heads of *Yucca* in the Mohave Desert, California in the M.C.Z. (Leconte collection).

Oblong oval; depressed, sparsely covered with fine pubescence, uniformly dark piceous, sometimes rufo-piceous. Head and pronotum densely punctate. Prothorax with width to length as 1.6 to 1, sides moderately arcuate, slightly narrowed in front, hind angles broadly rounded, the angle itself very small due to a slight sinuation just preceding and behind it. Elytra and dorsal segments more finely punctate than the pronotum. In the male the hypopygidium is simple; the additional segment not visible from above. In the female the pygidium is feebly, bluntly carinate. Length 4.5–6.2, width 2–2.5 mm.

This species is remarkable for its large size and oval, depressed form.

This species occurs in the flowers of *Yucca* (April–July) from Texas (Rivers collector), through New Mexico (Sacramento Mts., Alamogordo), Arizona (Chiricahua Mts., Santa Rita Mts., Santa Catalina Mts.), to California (Mohave Desert, Los Angeles Co., Argus Mts., Onyx, March 13).

10. CARPOPHILUS SAYI spec. nov.

Carpophilus niger (Say) of authors, in error = *Colastus nïger* (Say).

Holotype (♂) and allotype from Bear Lake, Warren County, Pennsylvania in the collection of the author. Paratypes from New York to Virginia west to Illinois in the author's collection.

Oval, slightly oblong, subopaque, sparsely pubescent, dark piceous, legs and antennae (except club) dark rufous, pronotal margins and humeri often rufous. There is a tendency for the humeri and margins of the pronotum to be paler. Head very densely punctate. Prothorax with width to length as 1.5 to 1, sides moderately arcuate, narrowed in front, margins bluntly crenulate, hind angles moderately prominent, hind margin sinuate on each side, disc slightly flattened, a feeble oblique impression on each side of the scutellum, surface densely, variosely punctate. A narrow smooth median line on the posterior half of the pronotum. Elytra conjointly with width to length as 1.2 to 1, slightly narrowed posteriorly, disc slightly flattened, surface a little more sparsely punctate than the pronotum. Abdomen much more finely punctate than the elytra. Prosternum densely punctate. In the male a large, vague, shallow depression on each side, before the hind margin of the hypopygidium (these depressions may be moderately deep and connected); additional segment not visible from above. The female with a distinct, blunt carina on the pygidium. Length 3–4.5 mm.

This species is closely related to *lugubris*, but differs in being more oval, darker, and shallower foveae on the male hypopygidium. A female from Albuquerque, New Mexico (writer's coll.) is evidently this species.

This species occurs (April–October) from Quebec to Georgia, west to Texas (Dallas), Iowa (Mt. Pleasant), and Manitoba (Aweme); also New Mexico (Albuquerque).

11. CARPOPHILUS LUGUBRIS Murray

Carpophilus lugubris Murray, 1864, Trans. Linn. Soc. London, **24**, 355.
Types: from Caracas, Venezuela and Florida in the British Museum.

Oblong oval; moderately convex; sparsely pubescent; uniformly fuscous (rarely black with paler elytra) except for rufescent elytral humeri and dark piceous antennal clubs. Head and pronotum rather coarsely, very densely punctate. Prothorax with width to length as 1.5 to 1; sides moderately arcuate, slightly narrowed in front, margins narrowly reflexed; sinuate before and behind the moderately prominent hind angles. Elytra conjointly with width to length as 1.1 to 1, densely, very shallowly punctate. Dorsal segments more finely, sparsely punctate than the elytra. Prosternum densely obsoletely punctate. In the male two deep, circular, depressions on the hypopygidium; additional segment not visible from above. In the female the pygidium is more or less bluntly carinate, the carina shining and tuberculiform at its apex. Length 3–4.5 mm.

This species is very near *sayi* but more parallel, paler, and has different male characters. Some specimens from Virginia, Pennsylvania, Ohio, and Illinois seem to be intermediate between *sayi* and *lugubris*, but are here treated as *sayi*.

This species occurs (June-October) from Brazil through Middle America to Arizona (Globe, Huachuca Mts., Duncan, Cornville), New Mexico (Las Vegas Hot Sprgs., Jemez Mts., Taos Co., Albuquerque), Texas (Cypress Mills), Utah (Green River), "W.T." (A.N.S.P.), Colorado (Masonville, Colorado Springs, Denver), Kansas, and Iowa; also Black Mts., N. C.

12. CARPOPHILUS CALIFORNICUS Schaeffer

Carpophilus californicus Schaeffer, 1911, Journ. N. Y. Ent. Soc., **19**, 115.
Type: from Tulare County, California (O. Dietz) in the U.S.N.M.

Very closely related to *sayi* but differing in having narrower pronotal margins, pronotal disc not so evidently flattened, pronotum usually darker, elytra bright rufous with suture, apices, and lateral margins piceous or black, and a more or less deep transverse depression preceding the hind margin of the pygidium, and the pygidium bluntly carinate in the female. Male hypopygidium with a crescentic, shallow depression before the hind margin. Length 3.5–4.5 mm.

Although usually distinguished by the large, bright rufous elytral spots, some specimens in the U.S.N.M. from Wash. Terr. and California (Santa Cruz Mts., Los Gatos) have the rufous spots obsolete and only shown clearly by large humeral spots.

This species occurs (June-August) in Wash. Terr., California (Tulare Co., Kaweah, Madera Co., Sylvania, Los Gatos, Santa Cruz Mts., Los Angeles Co.), Arizona (Huachuca Mts., Tucson, McNary, 7200 ft.) and Texas (Brewster Co.).

13. CARPOPHILUS RUFIVENTRIS Schaeffer

Carpophilus rufiventris Schaeffer, 1911, Journ. N. Y. Ent. Soc., **19**, 116.
Type: from the Huachuca Mts., Arizona in the Cornell Univ. Coll.

Elongate oval, depressed, covered with rather dark pubescence, piceous or black, underneath rufous, legs and antennae paler. Head rather coarsely, closely punctate. Prothorax with basal and apical margin nearly equal, sides feebly arcuate, anterior angles broadly rounded, basal angles distinct, punctures on the disc distinctly separated. Elytra more sparsely punctate than the pronotum. Dorsal segments more finely and densely punctate than the elytra. In the male the hypopygidium is simple; the additional segment not visible from above. Length 5–5.5 mm.

Known only from the Huachuca Mts., Arizona.

14. CARPOPHILUS DEFLEXUS Sharp

Carpophilus deflexus Sharp, 1899, Biol. Centr.-Amer., Col., **2**, 290. Schaeffer, 1911, Journ. N. Y. Ent. Soc., **19**, 118.
Types: from Mexico (Hoge) and Guatemala (Champion) in the British Museum.

Moderately depressed; strongly punctate; nigroferrugineous; humeri feet, and antennae rufous, antennal club fuscous. The margin of the pronotum is lightly impressed before the posterior angles. In the male a single broad depression on the middle of the hypopygidium; basal half of the middle tibiae much slenderer than the apical half. In the female the pygidium is slightly convex toward the apex. Length 4–4.5 mm.

Sharp states that *deflexus* can be separated from *lugubris* by the unusually coarse punctation, the depression on the pronotal margins, and the peculiar middle tibiae of the male. Also *lugubris* is less convex than *deflexus*.

This species, known to the writer only by the types, was described from Mirador, Mexico and Cerro Zunil and Dueñas, Guatemala. Schaeffer doubtfully referred two females (now in Cornell Univ. coll.) from the Huachuca Mts., Arizona to this species.

15. Carpophilus funebris Sharp

Carpophilus funebris Sharp, 1889, Biol. Centr.-Amer., Col., **2**, 288; pl. 9, fig. 10.
Types: from Guatemala and Panama (Champion) in the British Museum.

Oblong, feebly convex, very sparsely and finely pubescent, uniformly black, except that the antennae and feet are piceous, antennal club darker. Head and pronotum densely, rugosely punctate. Prothorax with width to length as 1.9 to 1, sides moderately arcuate, slightly narrowed anteriorly, margins very narrowly reflexed, sinuate before and behind the small hind angle. Elytra conjointly as wide as long, shallowly, variosely punctate. Dorsal segments more finely and much more sparsely punctate than the elytra. Prosternum densely, rugosely punctate. In the male a vague, shallow depression on each side, near the hind margin of the hypopygidium. In the female the pygidium is carinate.

The types are from Cerro Zunil, Guatemala and Volcan de Chiriqui, Panama. Sharp also mentions atypical specimens from Mexico. The above description is based on a single male collected July 15, 1938, Santa Catalina Mts., Arizona in the M.C.Z. (Fall collection).

16. Carpophilus obsoletus Erichson

Carpophilus obsoletus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 259.
Carpophilus cribellatus Motsch., 1858, Étud. Ent., **7**, 41.
Carpophilus strigipennis Motsch., 1858, Étud. Ent., **7**, 41.
Carpophilus funereus Reitt., 1884, Nitid. Japans, p. 259.
Types: of *obsoletus* in the Berlin Museum, of *cribellatus* from East Africa and Corsica and of *strigipennis* from Ceylon and Siam both presumably in the Zoöl. Mus., Univ. of Moscow, of *funereus* from Japan presumably in the National Museum in Budapest.

Oblong oval, convex, sparsely covered with long cinereous, rarely testaceous, pubescence. Occasionally all black above, or piceous, usually black with elytra dark piceous and the humeral umbone pale. Antennae and legs fuscous, the legs often becoming testaceous towards the extremities. Antennal club piceous. Head densely, rather coarsely punctate, finely alutaceous. Prothorax with width to length as 1.5 to 1, apex very feebly emarginate, sides feebly arcuate, slightly narrowed in front, densely punctate at center and very densely, more coarsely, rugosely punctate at the sides; finely alutaceous; a large vague depression near the hind angles but not near the margin. Hind angles variably subrectangular. Scutellum pentagonal. Elytra conjointly with width to length as 1.3 to 1, slightly longer than the pronotum, about as coarsely but more densely punctate than pronotum at center, punctures becoming obsolete apically and rugose at margin. Prosternum densely punctate, prosternal process carinate. Male hypopygidium simple or with two vague foveae. Male and female pygidium simple or variably acuminate and reflexed. Length 2.5–3.5 mm.

Like most widespread species *obsoletus* varies greatly in secondary sexual characters, punctation, convexity, proportions, etc.

This species occurs in Madagascar, Corsica, China, Japan, and the Oriental region, and apparently is recently introduced into the United States where it is found in California (Indio, M.C.Z.: Fall collection; Castro Valley, Feb. 27, 1938, in the Univ. of Calif. coll. and writer's coll.). These agree with specimens from China in the writer's collection.

17. CARPOPHILUS BREVIPENNIS (Blanchard)

Nitidula brevipennis Blanchard, 1842, Voy. d'Orbigny, Am. mer. Ins., p. 64.
Carpophilus lacertosus Murray, 1864, Trans. Linn. Soc. London, **24**, 354.
Carpophilus purpureipennis Murray, 1864, Trans. Linn. Soc. London, **24**, 354, 396.
Carpophilus ignobilis Fall, 1910, Trans. Amer. Ent. Soc., **36**, 124.
Types: of *brevipennis* from Arica, Peru presumably at Paris, of *lacertosus* and *purpureipennis* both from Venezuela in the British Museum, of *ignobilis* from the Santa Rita Mts., Arizona in the M.C.Z. (Fall collection).

Moderately elongate oval, subdepressed, sparsely pubescent, castaneo-piceous, legs and antennae, except club, paler. Head coarsely, moderately densely punctate. Prothorax with width to length as 1.4 to 1, sides evenly feebly arcuate, very slightly narrowed in front, margins very narrow, hind margin sinuate on each side behind the moderately prominent hind angles, punctation rather coarse and dense, the punctures on the disc usually separated by less than their diameters, disc with a very narrow, median, impunctate line on basal half. Elytra conjointly with width to length as 1.1 to 1, punctate about as the pronotum. Dorsal segments much more finely punctate than the elytra. In the male the hypopygidium is simple, the additional segment not visible from above. The female pygidium is very bluntly carinate and the lateral margins more or less reflexed. Length 3.5, width 1.6 mm.

This species is perhaps most closely related to *lugubris* but is more depressed and parallel. It also tends to approach *californicus,* but the latter is larger, more convex, and more coarsely punctate. In the Fall coll. (M.C.Z.) are specimens from the Huachuca Mts., Arizona with rufous elytra.

This species is found in *Yucca macrocarpa* and *Agave palmeri* (May-July) in Arizona (Oracle, Tucson, Santa Rita Mts., 5-8000 ft., Huachuca Mts.), New Mexico, Texas, through Mexico, Guatemala (Capetillo), Venezuela, to Peru and Brazil.

18. CARPOPHILUS DIMIDIATUS (Fabricius)

Nitidula dimidiatus Fabr., 1792, Ent. Syst., **1**, 261.
Carpophilus luridus Murray, 1864, Trans. Linn. Soc. London, **24**, 377.
Carpophilus mutilatus Erichson, 1843, in Germar, Zeitschr. für Ent., **4**, 258.
For complete synonymy see Grouvelle, 1913.
Types: of *dimidiatus,* from the West Indies, possibly at Kiel; of *luridus* from Europe, North America, South America, East Indies, Ceylon in the British Museum; of *mutilatus* from Brazil, West Indies, Portugal, Sicily in the Berlin Museum.

Oblong, convex, surface finely granular, feebly shining, sparsely pubescent; color varying from piceous to testaceous with the elytra always paler. Head rather densely, coarsely punctate, clypeus much more sparsely, finely punctate. Prothorax with width to length as 1.5 to 1, sides very feebly arcuate, narrowed in front, hind angles obtuse not prominent, surface sparsely, coarsely punctate. Elytra conjointly a little longer than wide, as sparsely but much more finely punctate than the pronotum. Prosternum densely punctate. In the male the hypopygidium is simple, the additional segment not visible from above. Pygidium simple in the female. Length 2—3.5 mm.

The above description is of typical *dimidiatus.* The species is so variable that a number of variations or possible distinct species have been described. The form *mutilatus* is larger and narrower, more finely and shallowly punctate; the form *luridus* has the prothorax more quadrate than in *mutilatus* and approaches *dimidiatus* in punctation. Since all three forms are cosmopolitan and intergrade, it seems best to make them all one variable species.

This species occurs in all tropical and temperate parts of the world. In the United States *dimidiatus* is found at all times of the year from Quebec to Florida west through Texas and Kansas to California (as far north as Redlands).

19. CARPOPHILUS FLORIDANUS Fall

Carpophilus floridanus Fall, 1910, Trans. Amer. Ent. Soc., **36**, 122.
Type: from Enterprise, Florida in the M.C.Z. (Fall collection).

Closely related to *dimidiatus*, but the head, prothorax, and elytra concolorous (rarely the elytra more pale), brown; dorsal surface of the abdomen and sometimes the metasternum darker. Also differs from *dimidiatus* in finer punctation, slightly stouter legs, the hind tibiae of the male subcylindrical for a short distance at base, then rather abruptly widening, the inner outline arcuate. Length 2—2.5 mm.

This species is easily distinguished from *dimidiatus* by the male hind tibiae.

This species is known (April-October) in South Carolina (Yenassea), Florida (Enterprise, Sanford, Marathon), and Alabama (Mobile).

20. CARPOPHILUS NITENS Fall

Carpophilus nitens Fall, 1910, Trans. Amer. Ent. Soc., **36**, 125.
Type: from Mobile, Alabama (H. P. Loding) in the M.C.Z. (Fall collection).

Oblong, subovate, moderately convex, surface shining, sparsely pubescent; piceous brown, beneath paler. Head moderately punctate. Prothorax with width to length as 1.5 to 1, subparallel basally, sides arcuately narrowed in front, hind angles well defined, surface coarsely, sparsely punctate, with a median, basal, impunctate line. Posterior half of scutellum impunctate. Elytra conjointly with width to length as 1.1 to 1, a little more finely punctate than the pronotum and the punctures becoming obsolete at the apices. Prosternum denselycoarsely punctate. In the male the hypopygidium is simple, the additional segment almost visible from above. The pygidium is simple in the female. Length 2.7–3 mm.

This species occurs (April-June, Sept.-March) from New Jersey (Avenel, Lakehurst) and Ohio (Columbus) to Georgia (Tybee Isl., Millidgeville in *Ergot*), west through Alabama (Mobile), to California (Santa Barbara, Santa Ana, Fresno, north to Alameda Co.).

21. CARPOPHILUS MARGINATUS Erichson

Carpophilus marginatus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 262.
Type: from North Carolina (Zimmermann) in the Berlin Museum.

Oval, slightly oblong, sides of prothorax and elytra continuous, finely sparsely pubescent, moderately shining, rufous or rufo-piceous, posterior fourth of elytra and sometimes the sutural margins somewhat darker. Head rather finely, densely punctate. Prothorax with width to length as 1.8 to 1, sides straight, arcuately narrowed in front, widest at the rectangular hind angles, surface densely punctate. Scutellum pentagonal. Elytra conjointly with width to length as 1.2 to 1, narrowed posteriorly, apices squarely truncate, more densely, obsoletely punctate than the pronotum. Prosternum sparsely punctate. In the male the hypopygidium is simple, the additional segment not visible from above. The female pygidium often has a faint suggestion of a carina. Length 1.5-2 mm.

The peculiar outline and very small size distinguishes *marginatus.*

This species occurs on freshly cut oak (May-November, chiefly July) from "Poughkeepsie" (N. Y. State List), and New Jersey (Camden), to Florida, west to Alabama (Tuskegee), north to Michigan (Detroit) and Lake Superior; also Oregon (Leconte coll.).

22. CARPOPHILUS CORTICINUS Erichson

Carpophilus corticinus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 263.
Type: from eastern United States (Knoch) in the Berlin Museum.

Oval, slightly oblong, subdepressed, feebly shining, sparsely pubescent, castaneo-piceous, rarely dark piceous, legs rufo-piceous, antennal club fuscous. Head and pronotum moderately densely, finely punctate. Prothorax with width to length as 1.6 to 1, as broad at base as at apex, sides broadly arcuate, margins rather broadly reflexed, hind angles subrectangular. Elytra conjointly a little wider than long, punctate as in the pronotum but with the interstices more granular. Prosternum densely punctate. In the male the hypopygidium is deeply emarginate for the additional segment, which is nearly visible from above. Length 2.8–3.4 mm.

Most closely related to *brachypterus, corticinus* differs in being larger, more depressed, and in the differently shaped pronotum.

This species occurs (April-Sept., chiefly June) from New York (Harrison), New Jersey (Fort Lee), and Ohio (Cincinnati) to Georgia, west to Texas, north to Michigan (Detroit, Gd. Ledge).

23. CARPOPHILUS BRACHYPTERUS (Say)

Nitidula brachypterus Say, 1825, Journ. Acad. N. S. Philad., **5**, 183.
Carpophilus carbonatus Leconte, 1859, Smiths. Contr. Knowl., p. 6.
Types: of *brachypterus* from eastern United States is lost, of *carbonatus* from Nebraska and Lake Superior in the M.C.Z. (Leconte collection).

Oblong oval, subdepressed, surface finely granular, very sparsely pubescent, piceous to black. Head and pronotum sparsely punctate. Prothorax with width to length as 1.6 to 1; apex and base equal, sides moderately arcuate, hind angles small but distinct. Elytra conjointly with width to length as 1 to 1.1, apices strongly truncate, face more finely, sparsely punctate than the pronotum. Prosternum nearly smooth. In the male the hypopygidium is not emarginate, but the additional segment is not visible from above. Length 1.8—2.5 mm.

This species occurs (April-August) from Ontario (Prince Edward Co.) and Quebec (Rigaud) to North Carolina (Southern Pines, March 26), west to Texas, Nebraska (Lincoln), Kansas (Douglas Co., Benedict, Onaga), Iowa (Mt. Pleasant), South Dakota (Sioux Falls) and White Fish Point, Lake Superior.

24. CARPOPHILUS DISCOIDEUS Leconte

Carpophilus discoideus Lec., 1858, Proc. Acad. N. S. Philadelphia, **10**, 62.
Carpophilus apicalis Lec., 1859, Smiths, Contr. Knowl., p. 6.
Tribrachys caudalis Lec., 1859, Proc. Acad. N. S. Philadelphia, **11**, 70.
Types: of *discoideus* (no. 6963) from Arizona; of *apicalis* from Georgia and Nebraska; of *caudalis* (no. 6964) from Nebraska are all in the M.C.Z. (Leconte collection).

Oval, slightly oblong, subdepressed, sparsely pubescent; rufo-piceous to piceous, legs paler, each elyton with a large pale discal spot. Head and pronotum moderately sparsely punctate. Prothorax with width to length as 1.7 to 1; apex and base equal, sides moderately arcuate, hind angles small but distinct. Elytra conjointly as wide as long, punctate like the pronotum, but more obsoletely punctate toward the apices. Prosternum smooth or nearly smooth. Male hypopygidium simple but deeply emarginate for the additional segment. Female pygidium deflexed at apex, so that it appears truncate from above. Length 2.2-3 mm.

Evidently closely related to *decipiens*, *discoideus* differs in being usually darker, smaller, less depressed, and narrower. But the key character and the female pygidium seem to offer the only dependable differences.

This species occurs (April-August) in Washington, California (Los Gatos, Santa Cruz Mts., Sisson, Sylvania, Pomona, Imperial Co.), Wyoming (Nat. Park), Nevada (Reno), Arizona (Ft. Yuma, Santa Rita Mts.), Utah (Uinta Co.), Colorado (Telluride), New Mexico (Gallup, Silver City, Albuquerque), Texas, Nebraska, Michigan (Port

Huron) and Lake Superior; also "Ill." (A.N.S.P.), "Geo." (Leconte coll.) and "Mass." (A.N.S.P.).

25. CARPOPHILUS DECIPIENS Horn

Carpophilus decipiens Horn, 1879, Trans. Amer. Ent. Soc., **7**, 279.

Types: from Tejon, California, Arizona, and Lower California. Cotypes in M.C.Z. (Leconte collection) and Philad. Acad. Nat. Sci. (Horn collection).

Oblong oval, depressed, sparsely pubescent, piceous, elytra and legs paler. Head and pronotum sparsely, rather coarsely punctate. Prothorax with width to length as 1.5 to 1, base very slightly narrower than the apex, sides moderately arcuate, slightly sinuate posteriorly, hind angles distinct but slightly retracted, disc flat. Elytra conjointly very little longer than wide, more granular and more finely, sparsely punctate that the pronotum. Prosternum densely punctate. In the male the hypopygidium is deeply emarginate for the additional segment, which is nearly visible from above. Female pygidium not truncate at apex. Length 2.4–3.5 mm.

This species occurs (March-Nov., Jan., chiefly July) from Alaska (Nome), through Canada to California (Castro Valley, Alameda Co., Santa Clara Co., Canta Cruz Co., Fresno Co., Pomona, Los Angeles, San Bernardino Mts., 6000 ft.), east through Arizona (Williams, Pinal Mts., Tucson, Huachuca Mts.), New Mexico (Albuquerque) and Texas (Chisos Mts.) to Nebraska and Louisiana (Opelousas).

26. CARPOPHILUS ZUNI Casey

Carpophilus zuni Casey, 1884, Contr. Coleopt. N. A., pt. 1, p. 34.

Type: from Arizona (Morrison) in the U.S.N.M. (Casey collection). Evidently this specimen came from the Leconte collection because there is in that collection (apparently substituted) an *Epuraea* labelled "*zuni* type" in Casey's handwriting.

Elongate, depressed, pubescence sparse and very fine; piceo-castaneous, beneath rufous, including the legs and antennae. Head minutely punctulate and rugulose. Prothorax one-half wider than long, width at base and apex equal, sides arcuate, strongly sinuate before the hind angles, margins broadly reflexed (rarely moderately so), surface minutely and very closely punctulate. In both sexes the pygidium has three strong posteriorly convergent carina. Length 3.1 mm.

This species resembles an *Epuraea* and is remarkable in the broadly reflexed pronotal margins and the singular pygidium.

A rare species, *zuni* occurs (July 9-August 17) in Arizona (Williams) and New Mexico (Beulah, Albuquerque).

27. CARPOPHILUS TEMPESTIVUS Erichson

Carpophilus tempestivus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 260.
Carpophilus tempestivus var. *terminatus* Murray, 1864, Trans. Linn. Soc. London, **24**, 389.
Types: both from Cuba (Gundlach) in the Berlin Museum.

Oblong, moderately elongate, finely granular, moderately convex, shining, very finely and sparsely pubescent, pale rufous, suture and apices of elytra often narrowly piceous, antennal club sometimes darker. Prothorax with width to length as 1.4 to 1, sides feebly arcuate, sinuate before the hind angles, which are small and retracted, surface sparsely punctate. Elytra conjointly a little longer than wide, more sparsely punctate than the pronotum. Prosternum very sparsely punctate. In the male the hypopygidium is simple, the additional segment not visible from above. In the female the pygidium is bluntly carinate. Length 1.7–2.5 mm.

Murray described the variety *terminatus* for those specimens with only the elytral apices piceous; a variation so slight that it cannot be dignified with a name.

This species occurs throughout the year from Georgia to Florida (Enterprise, Haulover, Lake Harney, Indian River, St. Lucie, Biscayne Bay), west to Louisiana (Lake Mary, Winnfield) and Arkansas (Hot Springs); also in the West Indies (Cuba, Porto Rico, Montserrat).

28. CARPOPHILUS ANTIQUUS Melsheimer

Carpophilus antiquus Melsh., 1844, Proc. Acad. N. S. Philadelphia, **2**, 105.
Type: from Pennsylvania in the M.C.Z. (Melsheimer collection).

Oblong, moderately convex, surface finely granular, moderately shining, very sparsely, very finely pubescent; rufous to rufo-piceous, paler beneath, at least the apical fourth of elytra always piceous. Head and pronotum sparsely, rather coarsely punctate. Prothorax with width to length as 1.7 to 1, base and apex of equal length, sides feebly arcuate, hind angles subrectangular. Scutellum mostly impunctate. Elytra conjointly as wide as long, a little more coarsely and sparsely punctate than the pronotum. Prosternum at middle very sparsely punctate. In the male the hypopygidium is simple, the additional segment not visible from above, and the pygidium reflexed at apex. The female pygidium is simple. Length 2–3 mm.

This species occurs (April-September) from "Can." (A.N.S.P.), Massachusetts (Sagamore), and New York (Flatbush), to Florida (Atlantic Beach), west to Texas, Missouri (Webster Groves, St. Charles), Kansas (Neosho Co.), and Iowa (Mt. Pleasant).

NITIDULINAE

Nitidulinae Er., 1843, in Germar, Zeitschr. für Ent., **4**, 226.

This subfamily grades imperceptibly into Carpophilinae, so that the differences seem superficial. The Nitidulinae are more heterogeneous than the other subfamilies and probably should be subdivided. In the following key the genera could not be placed in the order of their relationships. Since they are described in their natural order, the numbers after the genera in the key refer to this arrangement.

Key to genera of Nearctic Nitidulinae

1. Prothorax not margined at base; head horizontal 2
   Prothorax margined at base; head vertical 15
2. Prosternum depressed behind the coxae, not prolonged 3
   Prosternum elevated behind, often prolonged 12
3. All tarsi very distinctly dilated 4
   Tarsi not dilated, or but feebly so 7
4. Antennal grooves strongly convergent 5
   Antennal grooves parallel, passing directly backwards . . . . *Stelidota* (4)
5. Labrum bilobed 6
   Labrum feebly emarginate . . . . *Nitidula* (6)
6. Posterior tibiae of the male slightly arcuate, slender at basal half, suddenly broadened apically (not true of all exotic species); middle tibiae slender, similar in both sexes . . . . . *Haptoncus* (1)
   Posterior tibiae of both sexes slender, similar, or the middle tibiae dissimilar, that of the male being sinuate within and thickened at tip . . . . *Epuraea* (2)
7. Mentum broad, covering the base of the maxillae. *Prometopia* (7)
   Mentum not covering the maxillae 8

8. Front not lobed over the antennae 9
Front lobed over the insertion of the antennae 10
9. Tip of mandibles slightly bifid . . . . *Phenolia* (10)
Tip of mandibles not bifid . . . . *Omosita* (5)
10. Antennal grooves strongly convergent behind . . . . *Soronia* (9)
Antennal grooves parallel 11
11. Elytra not, or merely apparently costate . . . . *Lobiopa* (8)
Elytra distinctly costate . . . . *Amphotis* (11)
12. Head without antennal grooves 13
Head with distinct antennal grooves 14
13. Anterior tibia bidentate at middle . . . . *Perthalycra* (13)
Anterior tibia not toothed externally . . . . *Thalycra* (12)
Anterior tibia with outer apical angle greatly prolonged in the form of a large triangular tooth . . . . *Quadrifrons* (14)
14. Tarsi not dilated; body oval, pubescent . . . . *Pocadius* (15)
Front tarsi dilated; body parallel and glabrous . . . *Orthopeplus* (3)
15. Mesosternum protuberant in front; middle coxae widely separated 16
Mesosternum small, oblique, not protuberant 18
16. Prosternum prolonged, broadly dilated at tip; body glabrous . . 17
Prosternum less prolonged, feebly dilated at tip, body pubescent . . . . *Amphicrossus* (17)
17. Labrum deeply bilobed; hind tarsi longer than middle . . . . *Oxycnemus* (21)
Labrum feebly bilobed, hind and middle tarsi of equal length . . . . *Camptodes* (16)
18. Metasternum not protuberant; middle coxae narrowly separated 19
Metasternum protuberant, widely separating the middle coxae; prosternum not prolonged at tip . . . . *Cyllodes* (20)
19. Hind tarsi longer than the others; body glabrous . . . *Pallodes* (19)
Hind tarsi equal to the others; body pubescent . . . *Cychramus* (18)

1. HAPTONCUS Murray

Plates 4, 12

Haptoncus Murray, 1864, Trans. Linn. Soc. London, **24**, 401.
Genotype: *Haptoncus tetragonus* Murr. = *Haptoncus ocularis* (Fairm.).
Haptoncura Reitter, 1875, Verh. Nat. Ver. Brünn., **13**, 61 et 64.
Genotype: *Epuraea luteola* Er.

Body small, slightly convex. Head broad, clypeus indistinct, slightly porrect. Antennae a little longer than the head, first segment enlarged on the outside, second convex as long as the third, club large, oval, pubescent. Antennal grooves short, convergent. Labrum long, deeply bilobed. Mandibles strongly or feebly bidentate. Lacinia broad and rounded at tip, heavily bearded. Maxillary palpi with first segment small, second much larger and clavate, third smaller than the second, fourth cylindrical and much longer than the second. Ligula with rather large laterally projecting paraglossae, the palpi with first two segments small, the third greatly enlarged. Mentum transverse, more or less emarginate in front. Pronotum as broad as the elytra. Scutellum not round posteriorly. Epipleurae broad and attaining the elytral apices. Elytra long, the pygidium and penultimate segment ordinarily visible from behind, but not from above. Prosternal process widened and rounded posteriorly, sometimes reaching the metasternum. Mesocoxae a little further apart than the procoxae; the metacoxae about twice as far apart as the mesocoxae. In the male there is an additional segment, behind the pygidium, which is visible from above. Femurs canaliculate, tarsi feebly dilated, front tarsi more strongly dilated. Claws simple.

This genus connects the Nitidulinae with the Carpophilinae. It is very similar to *Carpophilus*, but differs in the longer elytra, different labial palpi, and the undeflexed eighth abdominal segment of the male.

Haptoncus contains 34 species. Except for one Brazilian species and the tropicopolitan *luteolus*, the genus is Old World.

HAPTONCUS LUTEOLUS (Erichson)

Plates 4, figs. 1–8; pl. 12, fig. 11

Epuraea luteola Er., 1843, in Germar, Zeitschr. für Ent., **4**, 272.
Epuraea texana Crotch, 1874, Trans. Amer. Ent. Soc., **3**, 76.
For complete synonymy see Grouvelle, 1913.
Types: of *luteolus* from Cuba (Otto) in the Berlin Museum; of *texana* from Texas, no. 8310 in the M.C.Z. (Leconte coll.).

Oval, slightly oblong, moderately shining, sparsely pubescent; uniformly testaceous, except for the black eyes and fulvous antennal club. Head finely, sparsely punctate. Prothorax with width to length as 1.9 to 1, sides feebly arcuate, narrowing anteriorly, margins narrowly reflexed, hind angles rectangular, surface rather finely, densely punctate. Elytra a little longer than wide, narrowed posteriorly, apices truncate, surface a little more sparsely and coarsely punctate than the pronotum. Middle tibiae simple in both sexes. In the male the posterior tibiae have the basal two-fifths slender and the apical portion suddenly about twice as wide; the additional segment is acutely rounded. Length 2–2.5 mm.

A tropicopolitan species, *luteolus* occurs throughout the year in the United States from California (Elsinore Lake, Pasadena, Tustin, Vista), Arizona (Yuma), Texas (Fedor), Alabama (Mobile), to Florida (many localities); also Tennessee, Ohio (Columbus) and New Jersey (Hopatcong). The recent northern records indicate that *luteolus* is being spread by human agency.

2. EPURAEA Erichson

Plates 4, 12

Epuraea Er., 1843, in Germar, Zeitschr. für Ent., **4**, 267.
Dadopora C. G. Thoms., Skand. Col., 1859, 1: 68; 1862, **4**, 168; 1867, 9: 378.
Epuraeanella Crotch, 1874, Trans. Amer. Ent. Soc., **5**, 76.
Omosiphora Reitt., 1875, Verh. Nat. Ver. Brünn., **13**, 56 et 63.
Micrurula Reitt., 1884, Wien. Ent. Zeit., **3**, 209.
Micruria Reitt., 1874, Verh. Nat. Ver. Brünn., **13**, 58 et 64.
Genotype of *Epuraea*: *Nitidula decemguttata* Fabr.

Body rather small, more or less oblong. Head rather small, clypeus indistinct. Antennae a little longer than the head, first segment strongly enlarged anteriorly, second convex as long as the third, third to fifth elongate, sixth and seventh short, eighth more or less transverse, club rather large and oval. Antennal grooves rather feeble, strongly convergent posteriorly. Labrum rather deeply bilobed. Mandibles with a single tooth behind which is a smaller tooth and a beard. Lacinia broad and rounded at tip, heavily bearded. Maxillary palpi with first segment very small, the second clavate, the third very short and transverse, the fourth cylindrical and nearly as long as the others together. Mentum strongly transverse, feebly emarginate anteriorly. Labial palpi with first segment small, second clavate, the third greatly enlarged and rounded or securiform (subg. *Dadopora*). Pronotum as broad or nearly as broad as the elytra. Elytra truncate or entire; epipleurae broad and attaining the apices. Prosternal process widened and rounded behind the coxae. Mesocoxae about as far apart as the procoxae, the hind coxae far apart (Subg. *Epuraeanella*) or not. Middle and hind tibiae variously developed, sometimes sexually dimorphic (see key). The three middle ventral segments shorter than the first and fifth. In the male the additional eighth segment is visible from above (from beneath in *liebecki*). Tarsi dilated; sometimes the posterior tarsi are feebly dilated. Claws simple or toothed (Subg. *Micrurula*).

This genus is most closely related to *Haptoncus* from which it differs in details of the mouthparts.

The genus *Epuraea* contains nearly 200 species found in all regions of the earth except South America. *Epuraea* is particularly well developed in the Holarctic region.

The members of this genus are most commonly found at sap in the spring. Some are found in fungi, in bees' nests, on flowers, or under old leaves.

Since the species could not all be keyed in the order in which they are described, the number after each species refers to its order in the natural arrangement.

Key to Nearctic EPURAEA

1. Middle tibiae dissimilar in the two sexes, that of the male sinuate within and thickened at tip, that of the female slender 2
Middle tibiae similar in the two sexes, slender 21

2. Intercoxal process of abdomen broad, truncate 3
Intercoxal process of abdomen narrow, acute, metasternum usually notched for its reception 7

3. Length 5 mm. or more, form broadly oblong 4
Length less than 5 mm., form more oval than oblong 5

4. Pronotal margins moderately explanate, hind angles rectangular . . . . *monogama* (1)
Pronotal margins not explanate, hind angles obtuse . . . *liebecki* (2)

5. Color yellow, elytra conjointly as wide as long . . . . *horni* (3)
Color testaceous to piceous, elytra conjointly longer than wide . . 6

6. Elytra narrower at apex, margins reflexed . . . . *helvola* (4)
Elytra scarcely narrower at apex, margins very narrowly reflexed . . . . *rufa* (5)

7. Elytra obliquely prolonged, not truncate 8
Elytra truncate at apex 10

8. Length 3 mm. or longer, pronotum not at all or moderately sinuate before the hind angles 9
Length 2.4–3.2 mm., pronotum strongly sinuate before the hind angles . . . . *papagona* (8)

9. Middle tibiae of male feebly dilated at tip . . . . *integra* (7)
Middle tibiae of male rather strongly dilated . . . . . . *ambigua* (6)

10. Form oblong oval....................................11
Form elongate, parallel; middle tibiae of male feebly sinuate..18
11. Middle tibiae of male strongly sinuate within; the inward prolongation of the tip well marked........................12
Middle tibiae of male feebly sinuate, tip merely thickened....14
12. Prothorax broadest at or near the base, hind angles rectangular.. ....*erichsoni* (11)
Prothorax distinctly narrowed at base.....................13
13. Sides of pronotum simply arcuate, hind angles not prominent... ....*rufida* (9)
Sides of pronotum sinuate posteriorly, hind angles rather acute.. ....*corticina* (10)
14. Large, pale yellow species with sides of thorax curved at base..17
Smaller, testaceous to fuscous, with sides of thorax obliquely narrowed and more or less sinuate at base................15
15. Hind angles of pronotum acute (perhaps also rectangular)...... ....*terminalis* (14)
Hind angles of pronotum subrectangular or rectangular.......16
16. Fuscous above, elytral margins very narrowly reflexed.......... ....*adumbrata* (12)
Pale testaceous to rufo-testaceous above, elytral margins less narrowly reflexed.................................*avara* (13)
17. Hind angles of thorax obtuse, margin very narrowly reflexed.... ....*fulvescens* (15)
Hind angles of thorax acute and prominent, margin broadly reflexed......................................*duryi* (16)
18. Prothorax one-half wider than long..............*orantula* (20)
Prothorax one-third wider than long.......................19
19. Antennal segment 3 elongate, 4–8 short..........*planulata* (19)
Antennal segments 3–5 moderately elongate...............(20)
20. Surface moderately shining, distinctly punctate...*truncatella* (18)
Surface subopaque, obsoletely punctulate..........*linearis* (17)
21. Abdominal intercoxal process broad, obtuse.................22
Abdominal intercoxal process triangular, more or less acute...26
22. Elytra not spotted....................................23
Elytra spotted...25
23. Elytra very broadly truncate behind, apex subequal in width to base; male first ventral with 2 longitudinal rows of hairs...... ....*alternans* (21)
Elytra narrowing to the truncate apex; male first ventral not modified..24

24. Elytra narrowly margined; pubescence above gray, not conspicuous . . . . *obtusicollis* (22)
Elytra more widely margined: pubescence above long, conspicuous due to silvery lustre . . . . *populi* (23)
25. Disc of pronotum uniformly dark colored; posterior male femora simple; body oblong, depressed . . . . *flavomaculata* (24)
Pronotum with a median longitudinal pale stripe; posterior male femora obtusely subangulate; body form more oval and convex . . . . *peltoides* (25)
26. Last antennal segment much larger than preceding . *depressa* (26)
Last antennal segment smaller than preceding 27
27. Prothoracic margin narrowly explanate 28
Prothoracic margin broadly explanate 29
28. Less than 3 mm. long, apex of pronotum distinctly emarginate . . . . *labilis* (27)
Length of 3 mm. or more, apex of pronotum feebly emarginate . . . . *umbrosa* (28)
29. Elytra conjointly emarginate at apex . . . . *scaphoides* (29)
No alternate.

The species of this genus are extremely variable, and consequently very difficult to key accurately. The females can only be named by guess work, by association with similar males. Almost every collection contains some aberrant specimens and even distinct, unnamed species. These cannot be described until each is represented by a series of both sexes.

1. EPURAEA MONOGAMA Crotch

Epuraea monogama Crotch, 1874, Trans. Amer. Ent. Soc., **5**, 76.

Type: from Vancouver and Sierra Nevada, California in a small globular fungus on dead pine, lectotype no. 7957 from Calif. in the M.C.Z. (Leconte coll.).

Very large, broadly oblong, depressed; above rufo-piceous to dark piceous, more rufous beneath; moderately shining; sparsely covered with short brown pubescence. Head moderately densely punctulate. Antennae rufous; segments 3, 4, 5 equal; 6, 7, 8 equal, each half the length of the three preceding segments. Prothorax feebly convex; its width to length as 1.7 to 1; narrowed in front; sides moderately arcuate, explanate, slightly reflexed, not fimbriate; hind angles rectangular; hind margin bisinuate. Elytra conjointly with width to length as 1 to 1.1; sides feebly arcuate, margin rather broadly and strongly reflexed; disc punctate as in the pronotum. Male and female pygidia fimbriate. Middle tibiae of male sinuate within and thickened at tip, of the female simple. Male eighth dorsal segment visible from above. Length 5–5.5, width 2.6–3 mm.

Comparisons with *liebecki* are to be found under the latter species.

This species occurs (May–July) from British Columbia (North Bend, Salmon Arm, Vancouver) through Washington (Easton), Idaho (Moscow Mt.), to California (Napa, Cameno, along the Sierra Nevada) in Nevada and Texas (Rivers collector).

2. EPURAEA LIEBECKI spec. nov.

Very large, broadly oblong, depressed, feebly shining, sparsely pubescent. Color above dark ferrugineous, beneath (except antennal club) pale ferrugineous. Prothorax very feebly convex, with width to length as 1.6 to 1, narrowed in front, sides moderately arcuate, not explanate, finely fimbriate, hind angles broadly rounded, hind margin slightly bisinuate; surface finely alutaceous, densely, rather coarsely punctate, each puncture bearing a short recurved dark seta. Elytra conjointly with width to length as 1 to 1.1, lateral margins evenly and very feebly arcuate, not explanate, very narrowly reflexed, finely fimbriate. The sutural half of each elytron with about seven vague rows of obsolete tubercles, each tubercle bearing a moderately long recumbent dark seta. Surface of elytra more finely and sparsely punctate than the pronotum, each puncture bearing a short recumbent seta. Pygidium with long pale fimbriae. Middle tibiae of male feebly sinuate within and feebly thickened at tip. Male eighth dorsal segment visible only from beneath. Length 5–6.3, width 2.8–3.4 mm.

Although resembling *monogama*, *liebecki* is broader, duller, lateral pronotal margins fimbriate but not explanate, head more flat, pronotum more strongly emarginate at apex, hind angles more obtuse, and surface more coarsely punctate.

This species is known from three males from Arizona, holotype in the M.C.Z. (Liebeck coll.); a paratype in the collection of the author; and a paratype collected July 14 at Carr Canyon, Huachuca Mts. (A.M.N.H.).

3. EPURAEA HORNI Crotch

Epuraea Horni Crotch, 1874, Trans. Amer. Ent. Soc., **5**, 76.

Type: from Grimsby, Canada (Pettit coll.) in the Philadelphia Acad. Nat. Sci.

Broadly oval, moderately shining, sparsely covered with short fulvous pubescence, color fulvous to testaceous. Head rather densely punctulate; antennae proportioned as in *monogama;* anterior fourth of prosternum transversely wrinkled. Prothorax with width to length as 1.6 to 1, sides moderately arcuate and gradually narrowed from base to apex, feebly sinuate before the subrectangular hind angles, apex moderately emarginate, lateral margins more widely explanate posteriorly and very slightly reflexed, surface moderately densely punctulate. Elytra conjointly as wide as long, broadest near the middle, margins rather broadly explanate and feebly reflexed, surface more sparsely punctulate than the pronotum. Epipleurae very sparsely punctate. Male middle tibiae feebly sinuate within, and only moderately thickened and prolonged at tip. Length 3.7–4.5, width 2–2.4 mm.

The form of *horni* is nearest *helvola* but even broader.

This species occurs from Canada (Grimsby) and Pennsylvania (Crooked Creek) south to North Carolina, west to Illinois.

4. Epuraea helvola Erichson

Plates 4, figs. 9–16; pl. 12, fig. 12

Epuraea helvola Er., 1843, in Germar, Zeitschr. für Ent., **4**, 273.
Omosita castanea Melsh., 1846, Proc. Acad., Philad., **2**, 106.
Epuraea rufa Reitt. (non Say), 1873, Verh. Nat. Ver. Brünn., **12**, 28.
Types: of *helvola* from Pennsylvania in the Berlin Museum; of *castanea* from Pennsylvania in the M.C.Z. (Melsheimer coll.); of *rufa* from North Carolina probably in the Hungarian National Museum, Reitter coll.).

Broadly oval; moderately convex; moderately shining, covered with short, sparse, pale pubescence; color rufous to dark piceous, usually piceous brown, epipleurae and legs paler. Head coarsely, densely punctate. Prothorax with width to length as 1.6 to 1, apex deeply emarginate, base feebly bisinuate, sides strongly arcuate and narrowing at base, feebly sinuate in front of the subacute hind angles, margins broadly explanate and slightly reflexed, surface densely punctate and subgranulate. Elytra conjointly with width to length as 1 to 1.1, suture slightly elevated, margin reflexed, obsoletely punctate and subgranular. Male middle tibiae strongly sinuate and dilated at tip. Length 2.7–3.7 mm.

Closely resembling *rufa, helvola* differs in the more deeply emarginate prothorax, the more attenuate elytra, and the broadly reflexed elytral margins.

This species occurs (May–Oct.) from New Hampshire to Virginia (Afton, Crooked Corner) and Kentucky, west to Iowa (Mt. Pleasant), and Mantiba (Aweme, Winnipeg).

5. EPURAEA RUFA (Say)

Nitidula rufa Say, 1825, Journ. Acad. Philad., **5**, 180.
Omosita badia Melsh., 1846, Proc. Acad. Philad., **2**, 106.
Epuraea rotundicollis Reitt., 1873, Verh. Nat. Ver. Brünn., **12**, 25, 34.
Types: of *rufa* from eastern United States is lost; of *badia* from Pennsylvania is in the M.C.Z. (Melsheimer coll.); of *rotundicollis* from boreal America in the National Museum, Budapest (Reitter coll.).

Oval; moderately convex; color sometimes rufous, usually rufopiceous, beneath rufous; moderately shining; sparsely covered with short fulvous pubescence. Head densely punctate. Prothorax with width to length as 1.7 to 1, apex moderately emarginate, base feebly bisinuate, sides strongly arcuate and narrowing at base, feebly sinuate before the subacute and moderately prominent hind angles, margin broadly explanate but not reflexed, surface subgranular but not densely punctate. Elytra conjointly with width to length as 1 to 1.2, suture slightly elevated, margin narrow and slightly reflexed, surface densely punctate, subgranular. Male middle tibiae strongly sinuate and dilated at tip. Length 2.9–3.5 mm.

Comparisons with its nearest relative, *helvola*, will be found under the latter. This species occurs (March–October, chiefly June) beneath leaves, at sap, and in fungi from Ontario (Prince Edward Co.) and Quebec (Montreal) to Georgia (Clayton), west to Missouri, Kansas (Lawrence), Nebraska (Lincoln), Minnesota (Goodhue Co., bred from fallen seeds of *Acer saccharum*), and Lake Superior (White Fish Point, Isle Royale).

6. EPURAEA AMBIGUA Mannerheim

Epuraea ambigua Mann., 1843, Bull. Moscow, **16** (pt. 2), 256.
Type: from Kenai Peninsula, Alaska. A cotype (no. 7959) is in the M.C.Z. (Leconte coll.) and cotypes are presumably in the Zool. Mus., Helsingfors.

Oblong oval, fulvous to dark rufous, elytra often clouded with fuscous, moderately shining, very sparsely covered with fulvous pubescence. Prothorax with width to length as 1.6 to 1, apex feebly emarginate, base very feebly bisinuate, sides moderately arcuate, obliquely narrowing (but slightly if at all sinuate) before the subrectangular hind angles, margin narrowly explanate (posterior third more broadly) and slightly reflexed, surface rather densely punctate. Elytra conjointly with width to length as 1 to 1.4, apices prolonged not truncate, margin very narrowly reflexed, slightly more coarsely punctate than the pronotum. Male middle tibiae feebly sinuate within and strongly prolonged inward. Length 3.4–3.8 mm.

This species occurs (May–August) from Alaska (Kenai) through British Columbia (Quesnel Lake) and Washington (Olympia) to California (Siskiyou Co., Eldorado Co., Santa Cruz Mts., San Mateo Co., Fieldbrook, Los Gatos).

7. EPURAEA INTEGRA Horn

Epuraea integra Horn, 1897, Trans. Amer. Ent. Soc., **7**, 212.

Type: cotypes from Fort Whipple, Arizona (Palmer) and Colorado (Morrison) are in the Philad. Acad. Nat. Sci. and the M.C.Z. (Leconte coll.).

Oblong oval, rufo-testaceous, elytra sometimes fuscous, moderately shining, sparsely covered with short fulvous pubescence. Head densely punctate. Prothorax with width to length as 1.7 to 1, base slightly wider than apex; sides moderately arcuate, near the base obliquely narrowed and slightly sinuate before the rectangular, moderately prominent hind angles; margin moderately explanate, slightly reflexed; apex moderately emarginate; base slightly bisinuate, surface densely punctulate and subgranular. Elytra conjointly with width to length as 1 to 1.3, margin narrowly reflexed, apices conjointly rounded and covering the pygidium, suture slightly dehiscent at tip, surface densely punctulate and subgranular. Male middle tibiae feebly sinuate and feebly dilated at tip. Length 2.8–3.5 mm.

Although related to *ambigua*, *integra* differs in the male middle tibiae and the more prominent hind angles of the pronotum.

This species occurs (April–July) in Nevada and Colorado, south to Arizona (Williams, Fort Whipple, Pinal Mts., Globe, Santa Rita Mts., Chiricahua Mts.) and New Mexico (Beulah). Sharp records *integra* from Guatemala (7000–9000 ft., Quiche Mts.). Cockerell collected it in the nest of *Bombus juxtus* at Beulah, New Mexico, in July.

8. EPURAEA PAPAGONA Casey

Type: from Arizona (Morrison) no. 6967, labelled "type" in Casey's handwriting, in the M.C.Z. (Leconte coll.).

Oblong oval, flavo-testaceous, moderately shining, sparsely covered with short fulvous pubescence. Head densely punctate. Prothorax with width to length as 1.5 to 1, base slightly wider than apex, sides moderately arcuate, near the base strongly sinuate, before the acute or rectangular hind angles, margins narrowly explanate except for posterior halves which are broadly explanate, base bisinuate, surface densely punctulate. Elytra conjointly with width to length as 1 to 1.2, margin narrowly reflexed, the apex of each elytron evenly rotundo-truncate, suture not dehiscent at tip, surface a little more coarsely and sparsely punctate than the pronotum. Male middle tibiae very feebly sinuate within and very feebly thickened at tip. Length 2.4–3.2 mm.

Very closely related to *integra*, *papagona* tends to differ in its smaller size, acute posterior pronotal angles, more truncate elytral apices and apical sutural angles not dehiscent.

This species occurs in June on *Populus tremuloides* in Colorado, Arizona (Williams), and New Mexico (Albuquerque). Sharp's record of northern Sonora is almost certainly based on specimens Morrison collected in what is now southern Arizona.

9. EPURAEA RUFIDA (Melsheimer)

Omosita rufida Melsh., 1846, Proc. Acad. Philad., **2**, 106.

Type: from Pennsylvania is not in the Melsheimer collection (M.C.Z.) but may yet be found in the general collection, among which Melsheimer's specimens were distributed by Samuel Henshaw.

Oblong oval, testaceous to dark rufous, moderately shining, sparsely covered with short fulvous pubescence. Head densely, rather coarsely punctate; antennal segments 4, 5 as long as 3. Prothorax with width to length as 1.6 to 1, apex feebly emarginate, base feebly bisinuate, sides moderately arcuate, feebly narrowed but not sinuate before the subrectangular hind angles; margins moderately widely explanate and very slightly reflexed; surface moderately coarsely and densely punctate, subgranular. Elytra conjointly with width to length as 1 to 1.1, margin narrowly reflexed, apices truncate, surface densely punctate, subgranular. Male middle tibiae very strongly sinuate within and strongly thickened and prolonged inward. Length 3.5–4.1 mm.

Comparisons with its closest relative *corticina*, will be found after the description of the latter. Although resembling *erichsoni*, *rufida* is larger, more finely punctate, pronotal margin broader, and the pronotum more narrowed posteriorly.

This species occurs (April–Sept.) beneath bark of oak and on flowers of linden from Ontario (Rosseau) to South Carolina (Charleston), west to Louisiana (Vowell's Mill) north to Michigan (Gd. Ledge).

10. Epuraea corticina Erichson

Epuraea corticina Er., 1843, in Germar, Zeitschr. für Ent., **4**, 270.
Type: from North America (probably eastern Pennsylvania) in the Berlin Museum (Koch coll.).

Oblong oval, fulvous to fuscous, usually rufo-testaceous with disc of pronotum and elytra often clouded with a darker color, moderately shining, sparsely covered with short fulvous pubescence. Antennal segments 4 and 5 shorter than 3. Prothorax with width to length as 1.5 to 1, apex slightly narrower than base, rather strongly arcuate, feebly narrowed and sinuate before the usually acute (rarely rectangular) hind angles, margins narrow and very feebly reflexed, surface densely and rather finely punctate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.3, margin narrowly reflexed, surface more coarsely and sparsely punctate than the pronotum. Male middle tibiae sinuate within and greatly dilated at tip. Length 3.1–3.6 mm.

The convexity of the prothorax and the sinuation of its sides are variable. This species is closely related to *rufida* but is slightly smaller, more convex, prothorax wider, its sides more arcuate and hind angles more acute, usually darker, and the male middle tibiae less prolonged inwards.

This species occurs (April–Sept., Dec.) under oak bark from New York (Rochester, N. Y. State List)to Florida (St. Augustine), west through Alabama (Mobile) to Louisiana (Winnfield), Mississippi (Meridian, Lucedale), Kansas (Douglas Co.), Iowa (Burlington, Mt. Pleasant), and Wisconsin; also "Nev." (A.N.S.P.).

11. Epuraea erichsoni Reitter

Epuraea Erichsoni Reitter, 1873, Verh. Nat. Ver. Brünn., **12**, 25, 35.
Type: from North America, cotypes in the Vienna Museum and Paris Museum (Marseul coll.).

Oblong oval, fulvous to dark rufous, usually luteo-testaceous, margins of elytra more or less fuscous, moderately shining, sparsely covered with short yellow pubescence. Head sparsely punctate. Prothorax with width to length as 1.6 to 1, apex very feebly emarginate, base feebly sinuate, sides feebly arcuate, only slightly narrowed before the rectangular hind angles, margin narrowly and feebly reflexed, surface densely, rather coarsely punctate. Elytra conjointly with width to length as 1 to 1.2, margin narrowly reflexed, apices truncate, surface less densely punctate than the pronotum. Male middle tibiae strongly sinuate within and strongly thickened at tip. Length 2.2–3 mm.

It is similar to *labilis* but has a less emarginate pronotum and different middle male tibiae.

This species occurs (April–August) in the early spring beneath bark and at sap, later on flowers of maple, huckleberry, and various marsh plants from Ontario (Rosseau) and Quebec (Montreal) south to Florida, west to Texas, Nebraska, and Manitoba (Cedar Lake).

12. EPURAEA ADUMBRATA Mannerheim

Epuraea adumbrata Mann., 1852, Bull. Moscow, **25** (pt. 2), 336.

Type: from Sitka, Alaska, a cotype (no. 7960) is in the M.C.Z. (Leconte coll.) and cotypes are presumably in the Zool. Mus. at Helsingfors.

Oblong oval, moderately shining, color of cotype fuscous, beneath pale, except for antennal club, underside of meso- and metathorax and abdomen which are fuscous; covered with fine yellow pubescence. Head rather finely, densely punctate. Prothorax with width to length as 1.6 to 1, apex feebly emarginate, base moderately bisinuate, sides rather feebly arcuate, moderately narrowed and very slightly sinuate before the subrectangular hind angles, margins moderately broadly explanate and very slightly reflexed, surface densely punctate, subgranular. Elytra conjointly with width to length as 1 to 1.2, margins very narrowly reflexed, apex of each elytron truncately rounded, surface very slightly more coarsely and sparsely punctate than the pronotum. Male middle tibia very feebly sinuate and thickened at tip. Length 3 mm.

The above description is of the cotype. Horn was confused about this species. Specimens from Olympia, Washington (Liebeck coll.: M.C.Z.) have unicolorous antennae, the pronotum more coarsely punctate and with less explanate margins than the cotype. Although very closely related to *terminalis*, *adumbrata* differs in being darker, pronotum more convex, and more explanate, and more sparsely punctate, and the elytra less explanate.

This species occurs (May–July) from Alaska (Sitka, Tschunuktnu River, Kenai Peninsula) to Washington (Olympia) and Colorado (Douglas Co.), east to Quebec (Montreal) and south to North Carolina

13. EPURAEA TERMINALIS Mannerheim

Epuraea terminalis Mann., 1843, Bull. Moscow, **16** (pt. 1), 95.
Epuraea immunda Sturm, 1844, Deutschl. Fn. Ins., **15**, 59.
Epuraea infuscata Maklin, 1853, Bull. Moscow, **26** (pt. 2), 206.
For complete synonymy see Grouvelle, 1913.
Types: of *terminalis* from Finland (at sap on birch) presumably in the Zool. Mus. at Helsingfors; of *immunda* from Germany presumably in the Zool. Mus. at Munich; of *infuscata* from Kenai Peninsula, Alaska, a cotype (no. 8309) is in the M.C.Z. (Leconte coll.) and cotypes are presumably in the Zool. Mus. at Helsingfors.

Oblong oval, moderately shining, sparsely and finely pubescent, color rufo-testaceous, elytra laterally and apically tending to be clouded with fuscous, beneath rufo-testaceous, metasternum darker, antennae unicolorous or with club fuscous. Head densely punctulate. Prothorax with width to length as 1.7 to 1, apex very feebly emarginate, base very feebly bisinuate, sides moderately arcuate, moderately explanate, and slightly reflexed, more or less distinctly sinuate before the prominent, acute hind angles, surface densely punctulate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.1, sides rather strongly, evenly arcuate, margin narrowly reflexed, surface more coarsely and sparsely punctate than the pronotum. Intercoxal process rather broad and triangular. Male middle tibiae abruptly but only moderately thickened at tip. Length 2.5–3 mm.

The species described by Horn under *immunda* is not this, but another unnamed one mentioned next. Arrow had sent Fall a European specimen of *terminalis* determined by Grouvelle which enabled Fall to determine that Horn's "*immunda*" was another species. The European *terminalis*, with one of its forms, in the writer's collection also show that it occurs in the New World.

This species occurs in Europe, across Siberia, and (May–July) from Alaska (Anchorage) south through British Columbia (Terrace) to Colorado (Douglas Co.), east to Wisconsin (Bayfield), Quebec (Joliette), and Maine (Paris).

EPURAEA sp. nec TERMINALIS (immunda auct.)

There is a species, widespread in western United States, that is labelled *immunda* in many collections, but is not *immunda* (=*terminalis*). A series of this species is in the Fall collection with the label "*immunda*" turned down. The Horn collection has a series from Salada Beach, California. It is difficult to determine just what the species is.

14. EPURAEA AVARA (Randall)

Nitidula avara Rand., 1838, Boston Journ. Nat. Hist., **2**, 18.
Epuraea nubila Lec., 1857, Pacific R.R. Report. App. 1, p. 36.
Types: of *avara* from Maine (at sap on prostrate sugar maple) is lost; of *nubila* from San Jose, California (no. 6908) in the M.C.Z. (Leconte coll.).

Elongate oval, moderately shining, sparsely and finely pubescent, rufo-testaceous, often with three indistinct fuscous spots on each elytron. Head densely punctate. Prothorax with width to length as 1.5 to 1, apex slightly narrower than base, apex moderately emarginate, base moderately bisinuate, sides feebly arcuate, the posterior third feebly narrowed to the rectangular hind angles, margin moderately broad and slightly reflexed, surface densely punctate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.2, apices rotundo-truncate, margins narrowly reflexed, surface finely alutaceous, more sparsely and coarsely punctate than the pronotum. Male middle tibiae very feebly sinuate within and slightly thickened at tip. Length 2.3–3.5 mm.

This is a very variable species. In particular, a specimen from El Dorado Crk., N. W. Terr. (Fall coll.: M.C.Z.) is more widely explanate and more sparsely punctate. Specimens from B. C., Calif., and Maine tend to be darker, pronotum with less explanate margins and more obtuse hind angles.

This species occurs especially at sap of maple and birch (May–August, chiefly June) from Yukon (El Dorado Crk.), British Columbia (Cawston), and Quebec (Joliette) south to California (San Jose), Nevada, New Mexico (Albuquerque), and South Carolina.

15. EPURAEA FULVESCENS Horn

Epuraea fulvescens Horn, 1879, Trans. Amer. Ent. Soc., **7**, 290, 296.
Type: from Grimsby, Canada in the Philadelphia Acad. Nat. Sci.

Oblong oval, moderately shining, sparsely covered with yellow pubescence. color above and beneath fulvous, antennal club sometimes darker. Prothorax with width to length as 1.7 to 1, apex feebly emarginate, base feebly bisinuate, sides very feebly arcuate, not sinuate before the more or less obtusely subrectangular hind angles, margin very narrowly explanate, surface rather coarsely and densely punctate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.2, margin moderately narrowed, apex of each elytron broadly rounded, surface very slightly more coarsely and sparsely punctate than the pronotum. Male middle tibiae slightly stouter than the posterior and feebly thickened at tip. Length 3–3.5 mm.

This very rare species occurs in June from Canada (Grimsby) to Georgia (Clayton).

16. EPURAEA DURYI Blatchley

Epuraea duryi Blatchley, 1910, Coleoptera of Indiana, p. 639, fig. 240.
Type: from Crawford Co., Indiana in the Blatchley coll. at Purdue University, Lafayette, Ind.

Broadly oval, subdepressed. Uniform pale yellow, sparsely pubescent, distinctly shining. Head finely and sparsely punctate. Thorax two-thirds wider than long, widest at middle, the sides thence converging and nearly straight to apex, feebly curved to base; disk finely and rather sparsely punctate, broadly and shallowly impressed near the hind angles. Elytra together a little longer than wide, tips subtruncate; disk finely and rather sparsely punctate. Abdomen finely granulate-punctate. Intercoxal process rather broad, but acute at apex. Length 3.5–4.7 mm.

Since *duryi* is unknown to the writer, the above description is copied from Blatchley. In the writer's collection is a female from East Dorset, Vt., which is much nearer *duryi* than any other species. But it is rufo-testaceous and has the pronotum somewhat differently shaped and punctate.

This species is known only from Blatchley's records of Indiana (Crawford Co., June 27–28) and Ohio (Cincinnati, collected by Charles Dury and presumably in his collection).

17. EPURAEA LINEARIS Mäklin

Epuraea linearis Mäklin, 1853, Bull. Moscow, **26**, 205.
Type: cotype (no. 8308) from the interior of the Kenai Peninsula, Alaska is in the M.C.Z. (Leconte coll.) and cotypes are presumably in the Zool. Mus. at Helsingfors.

Oblong to elongate, parallel; subopaque; piceo-rufous, elytra darker than the pronotum; when dark piceous or black the pronotal margins may be testaceous; sparsely covered with pale pubescence. Head sparsely, obsoletely punctulate. Antennae rufous, segments 6–8 very short. Prothorax with width to length as 1.5 to 1, very little wider at base than at apex, sides evenly very feebly arcuate, margin very narrowly reflexed, apex very feebly emarginate, base very feebly bisinuate, hind angles subrectangular, surface variably obsoletely punctulate, subgranulate. Elytra conjointly with width to length as 1 to 1.5, apices rotundo-truncate, margin very narrowly reflexed, surface slightly more coarsely and sparsely punctate than the pronotum. Length 2.7–3 mm.

A specimen from Quesnel Lake, B. C. (Kans. Univ. coll.) has the lateral margins more broadly explanate and the apex of the pronotum more distinctly emarginate. Examples from the southwest (U.S.N.M.) have the discs of the pronotum and elytra mainly black.

This species occurs on pine and spruce (May–Sept.) from Alaska (Kenai Peninsula, Seward, Sitka) through British Columbia (Quesnel Lake, Vancouver), Alberta (Edmonton), Oregon (Astoria), Montana (Sula), South Dakota (Black Hills), Colorado (Veta Pass) to Arizona (Chiricahua Mts.) and New Mexico (Cloudcroft); also New Hampshire (Waterville: U.S.N.M.). This last record should be rechecked.

18. EPURAEA TRUNCATELLA Mannerheim

Epuraea truncatella Mann., 1846, Bull. Moscow, **19** (pt. 2), 514.
Epuraea nigra Mäklin, 1853, Bull. Moscow, **26** (pt. 3), 204.
Types: of *truncatella* from Sitka, Alaska presumably in the Zool. Mus. at Helsingfors; of *nigra* a cotype from Kenai Peninsula, Alaska is in the M.C.Z. (Leconte coll.) and cotypes are presumably in the Zool. Mus. at Helsingfors.

Elongate, parallel, sparsely pubescent, moderately shining, color piceo-testaceous to nearly black, antennae unicolorous or with club darker. Head sparsely punctate. Prothorax with width to length as 1.3 to 1, apex feebly emarginate, base truncate, sides feebly arcuate and at posterior third narrowed and more or less strongly sinuate before the subrectangular or rectangular hind angles, margin narrowly explanate but more widely posteriorly, more or less feebly reflexed, surface densely punctate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.4, narrowly reflexed, slightly more sparsely punctate than the pronotum, finely alutaceous. Male middle tibiae sinuate within and strongly dilated at tip. Length 2.5–3 mm.

In color and degree of elongation *truncatella* varies considerably. It is easily confused with *planulata* and is compared under the latter.

This species occurs (April–August) from Alaska (Kenai Peninsula, Seward) through Yukon (Klondike), British Columbia (Terrace), Alberta (Edmonton), Ontario (Rosseau), Quebec (Hull) to Labrador (Ungava Bay), south to California (Sisson, Los Gatos, Lassen Co. on

Pinus jeffreyi), Nevada, Colorado (La Veta), New Mexico (Cloudcroft, Las Vegas, 11000 ft.), Indiana (Lawrence Co. in decaying fungi), West Virginia (Kingmont), and Virginia (Lee Co.).

19. Epuraea planulata Erichson

Epuraea planulata Er., 1843, in Germar, Zeitschr. für Ent., **4**, 271.
Epuraea placida Mäklin, 1853, Bull. Moscow, **35**, 203, sep. p. 111.
Types: of *planulata* from Sitka, Alaska in the Berlin Museum; of *placida* a cotype (no. 8311) from Kenai Peninsula, Alaska is in the M.C.Z. (Leconte coll.) and cotypes are presumably in the Zool. Mus. at Helsingfors.

Elongate, rufous to piceous usually rufo-piceous, when pale the elytra often clouded with a darker color; moderately shining; sparsely covered with pale pubescence. Head sparsely punctulate; antennal segment 3 moderately elongate, 4 and 5 shorter. Prothorax with width to length as 1.4 to 1, apex feebly emarginate, slightly narrower at apex than at base, sides very feebly arcuate, more or less feebly narrowing and more or less feebly sinuate before the rectangular hind angles, base truncate, margin very narrowly or moderately explanate and slightly or not at all reflexed, surface densely punctate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.4, each elytral apex broadly rounded, margin very narrowly reflexed, surface slightly more coarsely punctate than the pronotum. Length 2.5–3 mm.

It is not easy to separate *planulata* from *truncatella*, but the former has differently formed antennae; the pronotum is more depressed, its sides less arcuate and sinuate posteriorly, its margins less explanate.

In Leng's Catalogue *boreella* Zetterst. is given as possibly the same as *planulata*. In the writer's collection is a series from Europe which show *boreella* to be more closely related to *truncatella*, from which it differs in the sides of the pronotum being more arcuate, more sinuate, etc.

This species occurs (May–July) from Alaska (Kenai Peninsula, Sitka) through British Columbia (Terrace), Alberta (Edmonton), to Quebec (Montreal), south to Washington, Nevada, Colorado (Ouray, 8000 ft.), and in the east to North Carolina (Toxaway Lake).

20. Epuraea ornatula Notman

Epuraea ornatula Notman, 1919, Journ. N. Y. Ent. Soc., **27**, 102.
Type: from Cochrane, Ontario (August 22–30) in the collection of Howard Notman.

Oblong, slightly elongate, rather convex, rufo-testaceous. Prothorax one-half wider than long, narrowed in front, sides moderately arcuate from apex to one-third from the base, thence obliquely narrowed to the posterior angles which are obtuse, distinct, but finely rounded. Pronotal margins widely explanate, narrowly, strongly reflexed. Third antennal segment twice as long as wide, one-third longer than fourth, fourth and fifth equal, six-eight shorter. Elytra twice the length of the prothorax. Intercoxal process narrow and triangularly acute. Male middle tibiae faintly sinuate on inner edge and strongly dilated at tip. Length 2.25, width 1 mm.

Since the type of *ornatula* was not seen, the exact identity of this species is a question. Notman compares it with *boreella* (evidently meaning *planulata*) but says that *ornatula* is smaller, differently formed and colored. In the writer's collection is a series from North Elba, New York which agree with Notman's description except for being rufo-piceous and the antennae somewhat intermediate.

This species is known definitely only from Cochrane, Ontario and possibly from North Elba, Essex co., N. Y. (Oct.).

21. EPURAEA ALTERNANS Grouvelle

Epuraea alticola Fall, 1907, (nec Sharp) Trans. Amer. Ent. Soc., **33**, 223.
Epuraea alternans Grouv., 1912 (1913), Ann. Soc. Ent. France, **81**, 394.
Type: from 11,000 ft., Las Vegas Range, New Mexico in the M.C.Z. (Fall coll.).

Broadly obtusely oval, testaceous, moderately shining, sparsely covered with fine, yellow pubescence. Head moderately sparsely punctate. Prothorax with width to length as 1.7 to 1, apex strongly emarginate, base feebly bisinuate, sides moderately arcuate, the posterior third narrowed and very slightly sinuate before the subrectangular hind angles, margins moderately explanate and slightly reflexed, surface sparsely punctate and finely granular. Elytra conjointly with width to length as 1 to 1.1, convex, margins narrowly reflexed, apices rather distinctly truncate, surface more coarsely and densely punctate than the elytra. First ventral segment with two longitudinal lines of hairs at the middle. Intercoxal process broad, obtuse. Length 2.4, width 1.4 mm.

This species is distinctive in the ventral rows of hairs and the very truncated elytra. It is related to *ovata* but is more depressed, elytral apices more truncate, the pronotum less explanate, etc.

It is known only from the male holotype (no. 24,486).

22. EPURAEA OBTUSICOLLIS Reitter

Epurea obtusicollis Reitt., 1873, Verh., Nat. Ver. Brünn, **12**, 24, 32.
Epuraea ovata Horn, 1879, Trans. Amer. Ent. Soc., **7**, 298.
Type: Amer. bor. (Mus. Chevrolat); of *ovata,* from Michigan (Schwarz), Canada (Pettit) and California (Crotch) in the Philad. Acad. Nat. Sci. and a cotype no. 7962 from Michigan is in the M.C.Z. (Leconte coll.).

Oval; rufo-piceous, rarely testaceous, margins paler; moderately shining; convex, particularly the elytra; sparsely covered with pale yellow pubescence. Head moderately densely punctate. Prothorax with width to length as 1.7 to 1, apex narrower than base and moderately deeply emarginate, sides strongly arcuate posteriorly and strongly narrowed to retracted, small, distinct, rectangular hind angles, margins narrowly to widely explanate and moderately reflexed; base very feebly bisinuate; surface rather sparsely punctate and finely alutaceous. Elytra often fuscous, conjointly with width to length as 1 to 1.2, sides gradually narrowing to the apices which are conjointly rounded and not truncate, margins rather narrowly reflexed, surface more coarsely and densely punctate than the pronotum. Male middle tibiae simple. Length 2–3 mm.

Horn's description of *obtusicollis* was based on the type. Subsequently he received specimens from the District of Columbia (Ulke) which he named this species. It is similar to *ovata* except that it averages smaller (2 mm.), is more finely punctate, the pronotal and elytral margins more narrow, and the color testaceous or rarely piceous. The form is known from Mass. (Sherborn), New York, District of Columbia, and California (Lake Tahoe). Since the variable *ovata* grades into *obtusicollis,* it seems impossible to retain the former as a distinct species.

This species occurs under beech bark, in fungus, and in the fall under old leaves and in humus (May–Sept., chiefly June) from Quebec (Montreal, Quebec) and Maine (Mt. Katadin, 5060 ft.) to North Carolina (Black Mts.), west through Pennsylvania, Indiana, Nebraska (Nebraska City), Colorado (Garland), Arizona to California (Pasadena, Lake Tahoe), north to Alberta (Edmonton) and Manitoba (Winnipeg).

23. EPURAEA POPULI Dodge

Epuraea populi Dodge, 1939, Ent. News, **50**, 288.
Type: from Itaska Park, Minnesota, June 15 (allotype, July 9) in the U.S.N.M. Paratypes are in the M.C.Z., A.N.S.P., A.M.N.H., F.M.N.H., H. R. Dodge coll., and C. T. Parsons coll.

Broadly oblong-oval, uniformly dark piceous, somewhat paler beneath, moderately shining, sparsely covered with rather long, silvery grey pubescence. Head densely punctate, rather deeply foveate between the eyes. Prothorax with width to length as 1.8 to 1, apex moderately emarginate and distinctly narrower than the base, base feebly bisinuate, sides moderately arcuate and very slightly narrowed before the subrectangular hind angles, margin broadly explanate and slightly reflexed, an oblique depression on each side of the disc before the hind angles, surface rather sparsely, obsoletely, and finely punctate, finely alutaceous. Elytra conjointly with width to length as 1 to 1.1, sides evenly, feebly arcuate, apices rather distinctly truncate, margin very narrowly explanate, slightly reflexed, surface slightly more coarsely and sparsely punctate than the pronotum. Intercoxal process broadly triangular. Length 2.9 mm.

This species occurs on the bark of dead or dying aspen *Populus tremuloides* (May 27–July 25) in Minnesota (Itaska Park) and Michigan.

24. EPURAEA FLAVOMACULATA Mäklin

Epuraea flavomaculata Mäklin, 1853, Bull. Moscow, **26**, 205.
Epuraea depressa (Ill.) of authors, in error.
Type: from Kenai Peninsula, Alaska is presumably in the Zool. Mus. at Helsingfors.

Rather broadly oblong-oval, rarely broadly oval, shining, very sparsely pubescent, color brown to piceous, lateral margins and an anterior and posterior spot on the disc of each elytron testaceous, the anterior pair of spots are larger than the posterior and more often tend to be contiguous along the suture, beneath brown to piceous. Head densely, rather coarsely punctate. Prothorax with width to length as 1.8 to 1, apex moderately emarginate, base feebly bisinuate, sides rather feebly arcuate, posterior third moderately narrowed to subrectangular hind angles, margins moderately explanate and feebly reflexed, surface densely punctate and finely alutaceous. Elytra conjointly with width to length as 1 to 1.2, margin moderately narrowly reflexed, apices moderately prolonged, surface more coarsely and sparsely punctate than the pronotum. Male middle tibiae simple. Length 2.5–3.4 mm.

Apparently most closely related to *peltoides*, *flavomaculata* differs in being more oblong, less convex, with different color and posterior male femora.

This species occurs (May–Sept., chiefly June) from Ontario (Rainy

R. Dist., Beaver Mine) to New Hampshire (Mt. Washington) west through Michigan (Detroit) to Manitoba (Winnipeg) and Alberta (Edmonton); also New Mexico (Cloudcroft, 9000 ft.).

25. Epuraea peltoides Horn

Epuraea peltoides Horn, 1879, Trans. Amer. Ent. Soc., **7**, 298.
Type: cotypes from Michigan (Schwarz) and Maryland in the Philadelphia Acad. Nat. Sci. and the M.C.Z. (Leconte coll., no. 7963).

Oval to rather broadly oval, dark piceous above with the following markings testaceous to fuscous: pronotal margins and a median longitudinal stripe on basal half of pronotum, the margin of each elytron and four spots of which one on the humeral umbone and one posterior to it at the elytral two-fifths are of equal size; a larger spot on the suture at the elytral three-fifths, and the largest spot at the inner basal angle of the elytron; beneath testaceous to fuscous; moderately shining, sparsely covered with pale greyish pubescence. Head sparsely punctate. Prothorax with width to length as 1.8 to 1, apex strongly emarginate, base feebly bisinuate, sides rather strongly arcuate, hind angles prominent and rectangular, margin more or less broadly explanate, feebly or moderately reflexed, surface rather sparsely punctate. Elytra conjointly with width to length as 1 to 1.1, sides evenly feebly arcuate, margin narrowly reflexed, apices feebly truncate. Intercoxal process moderately broad and obtuse at tip. Male posterior femora are obtusely subangulate near the tip. Length 2.5–3.2 mm.

This species occurs (May–Sept., chiefly in the spring) from Ontario and Quebec (Montreal) to Virginia, west to Indiana and Wisconsin (Madison).

26. Epuraea depressa (Illiger)

Nitidula depressa Illiger, 1798, Käfer Preuss., **1**, 386.
Nitidula aestiva Fabr., 1775, Syst. Ent., p. 77.
Epuraea convexiuscula Mann., 1843, Bull. Moscow, **16** (pt. 2), 255.
For complete synonymy see Grouvelle, 1913.
Types: of *depressa* from Germany either in the Naturh. Mus. at Braunschweig or in the Berlin Museum; of *aestiva* from Europe (on flowers) possibly at Kiel or Copenhagen; of *convexiuscula* from Sitka, Alaska, cotypes presumably in the Zool. Mus. at Helsingfors and a cotype no. 8312 in the M.C.Z. (Leconte coll.).

Oval, slightly oblong; convex; rufo-testaceous or rufous, sometimes an elongate fuscous spot on each elytron; moderately shining; sparsely covered with testaceous pubescence. Head densely punctate; terminal segment of antennae somewhat quadrangular, as large or larger than the two preceding segments together, that of the female larger than that of the male. Prothorax with width to length as 1.8 to 1, apex moderately emarginate and distinctly narrower than the base, base very feebly bisinuate, sides feebly evenly arcuate sometimes very feebly obliquely narrowed before the subrectangular hind angles, margin narrowly explanate and very slightly reflexed, disc with a vague depression on each side near the hind angles, surface densely rather coarsely punctate, finely subrugose. Elytra conjointly with width to length as 1 to 1.25, margin very narrowly reflexed, apices separately rounded and feebly truncate, surface more sparsely truncate than the prosternum. Intercoxal process acutely oval in front. Length 2.5–3.5 mm.

This is more convex than any other Nearctic *Epuraea* and easily recognized by the greatly enlarged terminal segment of the antenna. Comparisons with its closest Nearctic relative will be found under *labilis.*

This species occurs on flowers in the spring (May–July) in Europe, northern Asia, and from Alaska (Unalaska I., Sitka) through British Columbia (North Bend), Manitoba (Aweme), to Ontario (Prince Edward Co.) south to California (Alameda Co., Lake Tahoe), Nevada, New Mexico (Beulah), Texas and Florida.

27. EPURAEA LABILIS Erichson

Epuraea labilis Er., 1843, in Germar, Zeitschr. für Ent., **4**, 272.
Type: from North America (probably Pennsylvania) in the Berlin Museum.

Oval, slightly oblong, distinctly convex, rufo-testaceous, moderately shining, sparsely covered with pale pubescence. Head rather densely and coarsely punctate. Prothorax with width to length as 1.7 to 1, apex slightly narrower than the base and feebly emarginate, sides feebly arcuate and very slightly obliquely narrowed before the subrectangular hind angles, margin narrowly explanate and slightly or not at all reflexed, surface rather coarsely and moderately densely punctate. Elytra conjointly with width to length as 1.2 to 1, apex rather distinctly truncate, sides very narrowly reflexed, punctate as in the pronotum. Intercoxal process broadly triangular. Length 2–2.5 mm.

Evidently closely related to *depressa*, *labilis* differs in the much smaller terminal antennal segment, the more acute intercoxal process, body slightly less convex, and the elytral apices more truncate.

This species occurs on flowers of dogwood, elder, etc. (May–Sept., chiefly in the spring) from Ontario (Toronto) and Quebec (Joliette) to Georgia, west to Texas, Kansas (Douglas Co.), and Manitoba (Winnipeg).

28. Epuraea umbrosa Horn

Epuraea umbrosa Horn, 1879, Trans. Amer. Ent. Soc., **7**, 300.

Type: from Fort Cobb, Caddo Co., Oklahoma, lectotype no. 3209 in the Philadelphia Acad. Nat. Sci. and cotype no. 7964 in the M.C.Z. (Leconte coll.).

Oval, slightly oblong, moderately shining, rufo-testaceous to ferrugineous (cotype is pale testaceous), elytra usually somewhat clouded with fuscous, so that an oval pale intra-humeral spot and another subapical spot are indicated, sparsely covered with yellow pubescence. Head densely punctate, antennae unicolorous. Prothorax with width to length as 1.5 to 1, apex feebly emarginate, base moderately bisinuate, sides evenly moderately arcuate and slightly narrower at base than at middle, hind angles subrectangular, margin very narrowly reflexed, surface rather coarsely moderately densely punctate, obsoletely subgranular. Elytra conjointly with width to length as 1 to 1.5, apices truncate, margin narrowly reflexed, surface punctate as in the pronotum. Male middle tibiae simple. Length 3–3.5 mm.

This species seems to be most nearly related to *labilis,* but is larger, the pronotum less emarginate apically and less explanate laterally. A pair from Cloudcroft, New Mexico (Kans. Univ. coll.) is very aberrant in having the pronotum and elytra much more broadly reflexed. Also the pronotum of one is broader than usual. These specimens resemble an elongate ferrugineous *populi.*

This species occurs (March 26–Sept. 1) from Texas (Lee Co., Columbus, Fedor) through Oklahoma (Ft. Cobb, Caddo Co.), Arkansas, Georgia, to North Carolina (Southern Pines) and New York (Lake George); also the aberrant pair from Cloudcroft, New Mexico.

29. Epuraea scaphoides Horn

Epuraea scaphoides Horn, 1879, Trans. Amer. Ent. Soc., **7**, 300.

Type: from Colorado (Morrison) in the Philadelphia Acad. Nat. Sci. (holotype no. 3208).

Elongate oval, depressed, uniformly rufo-testaceous, rather feebly shining, very finely and sparsely pubescent. Head moderately densely punctate; the third and fourth antennal segments of equal length and about three-fourths the length of the second. Prothorax one-third wider than long, slightly narrower in front, apex deeply emarginate, base truncate, sides feebly arcuate, hind angles rectangular, margins broadly explanate and strongly reflexed, surface moderately finely, densely punctate. Elytra conjointly one-third longer than wide, moderately narrower posteriorly, apices circularly conjointly emarginate, margin broadly explanate and strongly reflexed, surface punctate as in the pronotum. Intercoxal process triangular, acute. Length 3 mm., width 1.6 mm.

As Horn says, this is a most peculiar species, since it resembles a miniature *Embaphion* with the elytra conjointly emarginate

It is known only from the male holotype.

3. ORTHOPEPLUS HORN

Plates 5, 12

Orthopeplus Horn, 1879, Trans. Amer. Ent. Soc., **7**, 311.
Genotype: *Orthopeplus quadricollis* Horn.

Body elongate, parallel, glabrous, head broad and concave above, clypeus indistinct. Antennae longer than the head, first segment enlarged, second convex, third to fifth about of equal length; club large not compact. Antennal grooves broad, convergent behind. Labrum feebly bilobed. Mandibles acute at tip, feebly toothed on inner surface. Maxillary palpi with first segment small, next two about of equal length, the third thick and truncate at tip. Mentum apparently feebly emarginate in front. Pronotum as broad as the elytra. Prosternal process moderately expanded behind the coxae, elevated at tip, and subconically protuberant. Elytra long, exposing only the tip of the pygidium; epipleurae rather narrow, attaining the apices. Mesosternum not carinate. The procoxae and metacoxae about twice as far apart as the nearly contiguous mesocoxae. First and fifth ventral segments long, about of equal length; the second to fourth short and of equal length. An additional deflexed dorsal segment is clearly seen in the male. Anterior tarsi moderately dilated, other tarsi simple. Claws simple.

This genus is rather closely related to *Epuraea*, differing in details of maxillae, antennae, prosternal process, and tarsi. *Orothopeplus* contains only one rare species from the cordilleran region of the United States.

ORTHOPEPLUS QUADRICOLLIS Horn

Plates 5, figs. 1–5; pl. 12, fig. 13

Orthopeplus quadricollis Horn, 1879, Trans. Amer. Ent. Soc., **7**, 312.

Type: from Colorado (Morrison) in the Philadelphia Academy of Natural Sciences.

Elongate, parallel, moderately convex, glabrous, moderately shining, rufo-piceous, elytra darker. Head broadly concave, minutely punctate. Prothorax with width to length as 1.1 to 1, very slightly narrower posteriorly, apex feebly emarginate, sides very feebly arcuate and narrowly margined, base very feebly arcuate, disc moderately convex and transversely flattened anteriorly, surface finely densely punctate. Elytra parallel, very narrowly margined, apices rotundo-truncate, surface more coarsely and sparsely punctate than the pronotum. More distinctly punctate beneath; abdomen sparsely pubescent. Length 2.5, width 1 mm.

This species occurs on *Pinus ponderosa* (June-Sept.) from Colorado (Estes Park) and New Mexico (Cloudcroft) to Arizona (Grand Canyon, Flagstaff, Santa Catalina Mts.).

4. STELIDOTA Erichson

Plates 4, 12

Stelidota Er., 1843, in Germar, Zeitschr. für Ent., **4**, 300.

Genotype: *Nitidula geminata* Say.

Body oval, rather convex, moderately small. Head small, clypeus may or may not be distinct. Antennae a little longer than the head, first segment strongly enlarged anteriorly, second convex, third to fifth narrow and elongate, sixth to eighth short, club oval. Antennal grooves subocular, parallel, and moderately deep. Labrum bilobed. Mandibles with a small tooth behind the apex, bearded. Lacinia short, broad, rounded at tip, heavily bearded apically and on inner side. Maxillary palpi with first segment small, second clavate, third short and transverse, fourth cylindrical, about as long as the other three. Ligula with rather small paraglossae; labial palpi with first segment minute, second clavate, third thick, oblong, with or without a seta at apex. Mentum transverse, broadly and deeply emarginate anteriorly. Pronotum as broad or broader than the elytra. Elytra tapering apically; epipleurae broad, attaining the apices. Prosternal process broad, elevated and rounded behind the coxae. Mesocoxae a little further apart than the procoxae. Metacoxae nearly twice as far apart as the mesocoxae. The male additional dorsal segment may be distinctly visible or scarcely evident. Middle and posterior tibiae sometimes apically dilated in the male. Tarsi moderately dilated. Claws simple.

Stelidota is intermediate between *Epuraea* and *Ipidia* and most closely related to *Epuraea*. The Brazilian *Pseudostelidota* is unknown to the writer.

The genus *Stelidota* contains about 40 species which are generally distributed except in continental Africa. It is primarily a tropical genus and the three North American species seem to have a Neotropical origin. The species are found at sap in the spring, and later at rotten fruit, fungi, and under chips.

Key to Nearctic species

1. Prothorax at apex deeply emarginate, base distinctly bisinuate, margin broad and deplanate 2
   Prothorax at apex feebly emarginate, base truncate, margin narrow and not deplanate at base . . . . *strigosa*
2. Prothorax arcuately narrowed from base to apex, broadest at base . . . . *geminata*
   Prothorax with sides more arcuate at base, so that the thorax is narrower at base than a little in front . . . . *octomaculata*

STELIDOTA STRIGOSA (Gyllenhal)

Nitidula strigosa Gyll., 1808, Syn. Insect., **1** (pt. 2), 140.
Nitidula lusca Gyll., *loc cit.*
Types: of both species from St. Eustatius Isl., Lesser Antilles (Forsström) presumably in the Zool. Mus. of the University, Upsala.

Oval, narrower posteriorly, moderately shining, rather sparsely pubescent, testaceous to rufo-piceous, elytra indistinctly maculate in the paler specimens. Prothorax nearly twice as wide as long, narrowed in front, sides arcuate, hind angles subrectangular, margin narrow not deplanate, disc moderately convex, surface coarsely, densely, substrigosely punctate. Each elytron not subcostate but with 11 rows of coarse, closely placed punctures, between which are rows of sparsely spaced fine punctures, each of which bears a pale hair. Beneath densely, rather coarsely punctate. Length 1.5—2.5 mm.

This species occurs throughout the year but chiefly in the spring from Michigan (Marquette) and New Jersey to Florida (generally distributed) west to Kansas (Onaga) and Arizona, south through Central America and the West Indies into South America.

STELIDOTA GEMINATA (Say)

Plates 4, figs. 17–23; pl. 12, fig. 14

Nitidula geminata Say, 1825, Journ. Acad. Philad., **5**, 181.
Type: of *geminata* from eastern United States is lost.

Oval, narrower posteriorly, moderately shining, sparsely punctate, testaceous to rufo-piceous, elytra with indistinct pale spots. Head coarsely, densely, shallowly punctate. Prothorax twice as wide as long, narrower in front, apex deeply emarginate, base bisinuate, sides regularly arcuate from base to apex, margin broad, deplanate, hind angles rectangular, disc moderately convex, surface coarsely, densely punctate. Elytra slightly broader than the pronotum. Each elytron with 9 costae each of which has a row of fine punctures, each puncture bearing a short pale hair. Between the costae are rows of large, shallow punctures. Beneath moderately densely, coarsely punctate. In the male the middle and posterior tibiae distinctly arcuate, the former suddenly dilated in its distal half, the latter in the distal third. Length 2-3 mm.

This species occurs (Feb. 20-Oct. 23) chiefly in the spring from Massachusetts (Tyngsboro, Springfield) to Florida (Capron, Haulover, Edgewater, Miami, Paradise Key), west to Iowa (Mt. Pleasant), Missouri (St. Louis) and Texas (Columbus), south through Middle America to Colombia and Brazil.

STELIDOTA OCTOMACULATA (Say)

Nitidula octomaculata Say, 1825, Journ. Acad. Philad., **5**, 181.
Stelidota biseriata Reitt., 1874, Verh. Nat. Ver. Brünn, **12**, 15.
Types: of *octomaculata* from the Arkansas River in eastern Colorado is lost; of *biseriata* from Baltimore, Maryland, Cuba, and Brazil presumably in the National Museum, Budapest (Reitter coll.) and a cotype "Am. sept." in the Philadelphia Acad. Nat. Sci.

Oval, narrower posteriorly, moderately shining, sparsely pubescent, dark rufous to piceous, elytra with more or less indistinct pale spots. Thorax twice as wide as long, narrower in front, apex deeply emarginate, base bisinuate, sides arcuate, more abruptly so posteriorly, hind angles subrectangular, margin broad, moderately deplanate, surface densely, coarsely punctate. Elytra as broad as the pronotum. Each elytron with 9 rows of large, very shallow, oval, closely placed punctures between which are rows of very sparsely placed fine punctures, each bearing a short pale hair. Beneath coarsely, densely punctate. In the male the eighth dorsal segment is particularly evident. Length 2.2—3.5 mm.

Horn placed *biseriata* as a synonym of *geminata*, but the cotype in his collection belongs to *octomaculata*.

This species occurs (April-Oct., chiefly in the spring) from Ontario (Toronto) and Quebec (Montreal) to Florida, west to New Mexico (Las Vegas Hot Springs), Arizona (Tucson), Nebraska (West Pt.), Michigan (Lansing, Adrian, Marquette), and Wisconsin (Clintonville).

5. OMOSITA Erichson

Plate 4, figs. 24–31; pl. 12, fig. 15

Omosita Er., 1843, in Germar, Zeitschr. für Ent., **4**, 298.
Genotype: *Silpha colon* Linn.

Oblong oval, moderately convex. Antennae longer than the head, first segment enlarged, second convex and as long as the third, club large and compact. Antennal grooves deep, slightly convergent posteriorly. Labrum feebly bilobed. Mandible usually pointed with a tooth on inner side, but may be blunt and untoothed. Lacinia broad and rounded at tip, heavily bearded. Maxillary palpi with first segment small, second much longer and clavate, third shorter than the second, fourth cylindrical and a little longer than the second. Ligula with rather large laterally projecting paraglossae, the palpi with first segment small, the next two long and of equal length. Mentum transverse, emarginate in front. Epipleurae broad and attaining the elytral apices. Elytra long; pygidium exposed. Prosternal process broad and expanded behind the coxae. Mesocoxae a little further apart than the procoxae; metacoxae slightly further apart than the mesocoxae. Male eighth dorsal segment scarcely visible. The tarsi, particularly the anterior pair, are strongly dilated. Claws simple.

This genus is more or less intermediate between *Nitidula* and *Epuraea*.

Omosita contains nine species, of which two occur in New Zealand, one is Indian, one is from Mexico and Guatemala, three are Palaearctic, and two are Holarctic. There is evidence that the Holarctic forms originated in the Old World.

Posterior halves of elytra mainly testaceous .... *colon*
Posterior halves of elytra mainly piceous .... *discoidea*

OMOSITA (Saprobia) COLON (Linn.)

Silpha colon Linn., 1758, Syst. Nat., ed. X, p. 362.
See Grouvelle, 1913, for complete synonymy.
Type: from Europe, presumably in the collection of the Linnaean Society of London.

Oval, moderately convex, sparsely pubescent. Piceous, except for clypeus, antennae, margins of pronotum, some small basal elytral spots, and a large apical elytral spot, which are testaceous or rufous. The large apical elytral spot encloses a small piceous spot. Beneath dark rufous. Prothorax with width to length as 1.6 to 1, margins broadly reflexed, moderately arcuate, surface very densely, coarsely punctate. Elytra conjointly with width to length as 1 to 1.1, a little less densely and coarsely punctate than the pronotum. Length 2—3.5 mm.

For an account of the biology of *colon* see Eichelbaum, 1903, All. Zeitschr. Ent., 8: 81. Comparisons with *discoidea* are under the latter species.

This species occurs (April-Sept.) from southeastern Canada to Florida, west to Texas (Dallas, Brownsville), New Mexico, Missouri (Kirkwood), Nebraska (West Pt.), Kansas (Topeka, Lawrence), Iowa (Ames), Oregon (Corvalis) and British Columbia; south into Mexico (Orizaba and Paso de San Juan, Cordova); also northern Eurasia.

OMOSITA (Saprobia) DISCOIDEA (Fabricius)

Nitidula discoidea Fabr., 1775, Syst. Ent., p. 78.
Nitidula cincta Heer, 1841, Fauna Helvetia, **1**, 396.
Omosita inversa Leconte, 1857, Pacific R.R. Rep. App. I, p. 36.
Types: of *discoidea* from England probably in the British Museum (Banksian coll.); of *cincta* from Switzerland in the Ent. Inst. of the Eidgen. Techn. Hochschule at Zurich; of *inversa* from San Jose, California in the M.C.Z. (Leconte coll.).

Oblong oval, moderately convex, rather sparsely pubescent. Above testaceous, except for the head, antennal club, and posterior third of elytra, which are piceous. The posterior third of the elytra encloses several pale spots. Beneath dark rufous. Prothorax with width to length as 1.6 to 1, margins broad, moderately arcuate, surface densely, rather coarsely punctate. Elytra conjointly with width to length as 1 to 1.3, more sparsely and finely punctate than the pronotum. Length 2—3.2 mm.

This species is less oval, more finely punctate, and differently marked from *colon*.

This species occurs (April-Sept.) in Europe, Northern Asia, and from Alaska (Skagway) to southern California (Los Angeles, San Bernadino Mts.), also from Alberta (Edmonton) to New Mexico (Las Vegas Hot Springs); east to Colorado by 1879, to Maryland (Chestertown) by 1899, and to New Jersey and New York by 1930. Possibly *discoidea* was introduced into New Jersey and Maryland directly from Europe.

6. Nitidula Fabricius

Plates 5, 12

Nitidula Fabr., 1775, Syst. Ent. p. 77.
Genotype: *Silpha rufipes* Linn.

Body oblong, head broad, clypeus indistinct, slightly porrect. Antennae a little longer than the head, first segment enlarged, second convex, third long and slender, club large, nearly round in outline. Antennal grooves short and slightly convergent. Labrum feebly bilobed. Mandibles with blunt apices and no secondary teeth. Lacinia broad, rounded at tip, heavily bearded. Maxillary palpi with first segment small, second much larger and clavate, third smaller than the second, fourth cylindrical and about as long as the second. Ligula with large paraglossae; palpi with first segment small, second and third long and about of equal length. Mentum strongly transverse, feebly emarginate in front. Prothorax nearly as broad as the elytra. Elytra long, exposing only the tip of the pygidium; epipleurae broad, nearly attaining the apices. Prosternal process greatly expanded behind the coxae, but not attaining the metasternum. Mesocoxae a little further apart than the procoxae; the metacoxae about twice as far apart as the mesocoxae. Ventral segments about of equal length, first a little longer than the rest. Tarsi feebly dilated; claws simple. Male eighth dorsal segment just visible from behind.

This genus seems nearest to *Omosita*. The beetles breed in carrion and fungi, and in Europe some species are known to be predaceous on Scolytidae.

Nitidula contains ten Holarctic, two Nearctic, and three Neotropical species. Of the American species with Holarctic distribution at least two, and possibly two more, are introduced. The forms vary much in shape, pubescence, and markings.

Key to Nearctic Nitidula

1. Each elytron with one pale spot........................*bipunctata*
    Elytra plain or with other markings........................2
2. Unicolorous above, piceous or black........................3
    Elytra maculate or at least paler than pronotum................4
3. Color black..*nigra*
    Color piceous (rarely black)..............................*rufipes*
4. Pronotum moderately convex................................5
    Pronotum feebly convex, with yellow margins......*flavomaculata*
5. Length 3—5 mm....................................*ziczac*
    Length 1.6—3 mm..................................*carnaria*

NITIDULA BIPUNCTATA Linn.

Silpha bipunctata L., 1758, Syst. Nat. ed. X, p. 359.
For complete synonymy see Grouvelle, 1913.
Type: from Europe, probably in the collection of the Linnaean Society of London.

Broadly oval, moderately convex, densely pubescent, color above brown to black, beneath somewhat paler and more rufous; a testaceous or rufous spot on the disc of each elytron near the suture. Prothorax with width to length as 1.7 to 1; sides usually broadly reflexed, moderately arcuate, narrowing anteriorly, posterior angles subrectangular. Head and pronotum densely covered with medium and minute punctures. Elytra conjointly with width to length as 1 to 1.1, finely and sparsely punctate. Prosternum coarsely punctate. Length 3—5 mm.

This species is very variable in color, punctation, and convexity of pronotum. Specimens from Alberta and Alaska are aberrant in being black with orange elytral spots, pronotum less convex and with finer punctation. But these differences are found separately in specimens from other regions.

This species occurs (April-July) from Alaska (McKinley Park) through Yukon (Dawson), Manitoba (Aweme), Ontario (Toronto) to Quebec (Montreal), south to Virginia (Middleton), "Carolina" (Olivier), Kentucky, west to Texas, Missouri (Sedalia), Kansas (Topeka), Iowa, and Minnesota; and south in the west to Oregon.

NITIDULA NIGRA Schaeffer

Nitidula nigra Schaef., 1911, Journ. N. Y. Ent. Soc., **19**, 117.
Type: from Alaska in the Cornell University collection at Ithaca.

Oblong oval, moderately convex, densely pubescent, moderately shining, dark piceous or black, legs rufous. Prothorax with width to length as 1.6 to 1, disc rather flat, margins narrowly reflexed, sides feebly arcuate, narrowing anteriorly, hind angles rectangular, densely covered with medium and minute punctures. Elytra conjointly with width to length as 1 to 1.2, finely and sparsely punctate. Length 3.5—4 mm.

This species is hardly distinguishable from *rufipes* but tends to be black instead of piceous, have the pronotum narrower at apex, its lateral margins more reflexed, and the surface more sparsely punctate. Since both *nigra* and *rufipes* are very variable, these differences do not hold true. However, *nigra* seems to be geographically distinct, and should probably be a subspecies of *rufipes*.

This species occurs (May-Sept.) from Alaska (McKinley Park, Rampart House) through British Columbia (Cranbrook), Yukon (Dawson, White Horse), Alberta (Edmonton, Jasper) to Manitoba (Aweme, Winnipeg). Specimens that are more or less typical have been seen from as far south as Iowa.

NITIDULA RUFIPES (Linn.)

Plate 5, figs. 6–13

Silpha rufipes L., 1767, Syst. Nat., ed. XII, **2** (pt. 2), 573.
For complete synonymy see Grouvelle, 1913.
Type: from Europe, probably in the collection of the Linnaean Society of London.

Oblong oval, moderately convex to rather depressed, moderately densely pubescent, moderately shining, piceous to dark piceous, rarely black, legs paler. Prothorax with width to length as 1.6 to 1, rather depressed or moderately convex, margins narrowly reflexed, sides feebly arcuate, very slightly narrowed anteriorly, hind angles subrectangular, densely covered with medium and minute punctures. Elytra conjointly with width to length as 1 to 1.2, finely and sparsely punctate. Length 2—4 mm.

This species is very variable in degree of convexity, punctation, and pubescence. The American examples tend to be more convex than the European.

This species occurs (April-Sept.) from British Columbia (Peachland, Quesnel Lake) through Manitoba (Winnipeg) to Ontario (Toronto), south to Pennsylvania (Harrisburg), west to Kansas, Wisconsin, Lake Superior (Port Arthur), and Montana.

NITIDULA FLAVOMACULATA Rossi

Nitidula flavomaculata Rossi, 1790, Fauna Etrusca, **1**, 58.
Nitidula flexuosa Oliv., 1790, Ent., **2**, 7. Pl. 1, fig. 6.
Type: from Italy, probably in the Berlin Museum.

Oblong oval, moderately depressed, densely and finely pubescent. The color is piceous except for the antennae (except the club), legs, lateral margins of pronotum, a pair of humeral spots, which may or may not be contiguous with a pair of discal elytral spots (which may or may not be contiguous with each other) are testaceous. Prothorax with width to length as 1.5 to 1, lateral margins slightly narrowed anteriorly, very narrowly reflexed, moderately arcuate, more strongly so at posterior third, hind angles obtuse, surface finely and densely punctate. Elytra conjointly with width to length as 1 to 1.1, more finely and sparsely punctate than the pronotum. Length 3—5 mm.

This species occurs in Europe, North Africa, and the Near East. Recently Dodge, 1939, has reported it from Oakland Co. Oct., 1933) and Alameda Co. (March, 1934), California, also Washington, D. C., April 13, 1934. The writer has seen specimens from California (Mt. Diablo, Altamont, Antioch, Davis, Castro Valley) of which the earliest date is April 1, 1933. C. A. Frost has it from Maine and Massachusetts. Malkin records it from Manasquan Beach, New Jersey (Journ. N. Y. Ent. Soc., 1941). Evidently it has been introduced into the west and east coasts separately and has already become naturalized.

NITIDULA ZICZAC Say

Plate 12, fig. 16

Nitidula ziczac Say, 1825, Journ. Acad. N.S. Philad., **5**, 179.
Nitidula uniguttata Melsh., 1846, Proc. Acad. N.S. Philad., **2**, 106.
Nitidula humeralis Lec., 1859, Proc. Acad. N.S. Philad., p. 70.
Nitidula inornata Horn, 1879, Trans. Amer. Ent. Soc., **7**, 303.
Types: of *ziczac* from Pennsylvania is lost; of *uniguttata* from Pennsylvania in the M.C.Z. (Melsheimer coll.); of *humeralis* from Fort Tejon, California in the M.C.Z. (Leconte coll.); of *inornata* not found in the Philadelphia Acad. of Sciences.

Oblong, moderately convex, densely pubescent. Typically the color is rufo-piceous, the elytra with three longitudinal basal spots and a median sigmoid band testaceous. The elytra markings may be absent or vary in their degree of development. Prothorax with width to length as 1.6 to 1, lateral margins very narrowly reflexed, moderately arcuate, hind angles obtuse. Elytra conjointly with width to length as 1 to 1.2. Pronotum and elytra finely, sparsely punctate. The pubescence over the elytral spots tends to be grey. Length 3—5 mm.

This species is extremely variable. The name *uniguttata* is based on a very small specimen (3.2 mm) with the elytral markings greatly reduced. Leconte's *humeralis* is based on a specimen that is longer and more convex than usual and has only a juxta-humeral spot. Horn's *inornata* is pale piceous and entirely immaculate.

The range of *ziczac* is (April-October) all over the United States north to British Columbia (Peachland), Alberta (Lethridge), Manitoba (Winnipeg), Michigan (Detroit), and New York (Rochester: N. Y. State List); also south into Mexico.

NITIDULA CARNARIA (Schall.)

Silpha carnaria Schall., 1783, Abh. Schrift. Nat. Ges. Halle, **1**, 257.
For complete synonymy see Grouvelle, 1913.
Type: from Europe, unknown to the writer.

Oblong oval, moderately convex, densely pubescent, piceous with two pale spots on each elytron. These spots may be obsolete. Prothorax with width to length as 1.8 to 1, lateral margins very narrowly reflexed, apex very slightly narrower than the base, sides moderately arcuate, hind angles obtuse, surface very densely covered with small and minute punctures. Elytra conjointly with width to length as 1 to 1.2, more finely and sparsely punctate than the pronotum. Length 1.6—3 mm.

This is a Palaearctic species which has been introduced into the United States. Although there is a specimen from "Utah" in the Leconte collection, the first definite record seems to be a specimen in the writer's collection from New York, July 14, 1894. It has since been found (April-October) from Massachusetts (Cambridge, Lynn Beach) to New Jersey (Manasquan Beach) and Pennsylvania (Easton), west to Michigan and Wisconsin; also California (Oakland).

7. PROMETOPIA Erichson

Plates 5, figs. 14–21; pl. 12, fig. 17

Prometopia Erichson, 1843, in Germar, Zeitschr. für Ent., **4**, 279. Genotype: *Nitidula sexmaculata* Say.

Body large, oval, depressed. Head large, clypeus indistinct. Antennae longer than the head, first segment convex, second short and convex, third slender and very long as long as next three together, fourth to eighth short and about of equal length, ninth triangular, club elliptical. Labrum nearly semicircular, feebly bilobed. Mandibles prominent, bifid at tip, and a tooth behind the apex. Lacinia slender, rounded at tip, with a short beard. Maxillary palpi long and slender, first segment small, second longer and clavate, third longer, and fourth slender and about as long as the first three. Ligula with small paraglossae; palpi long and slender, first segment minute, second longer than the third. Mentum large, semi-circular, anteriorly with a small deep emargination. Pronotum deeply emarginate anteriorly, sides broadly explanate, as wide as the elytra. Scutellum small and broad. Elytra entire, covering the pygidium; epipleurae very broad, attaining the apices. Prosternal process flat, greatly widened behind the coxae, truncate posteriorly. Mesocoxae twice as far apart as the procoxae, metacoxae slightly more separated than the mesocoxae. First ventral segment as long as next two together, second to fifth about of equal length. Femurs broad and flat. Tarsi very feebly dilated. The male eighth dorsal segment visible only from beneath. Claws simple.

Prometopia is related to the Palaearctic *Ipidia* and the Oriental *Parametopia* but is not very near any Nearctic genus.

The genus contains 24 species and is lacking in the Palaearctic region. Only two species, evidently of Neotropical origin, are Nearctic.

Body oval, elytra maculate . . . . *sexmaculata*
Body oblong-oval, elytra unicolorous . . . . *bidentata*

PROMETOPIA SEXMACULATA (Say)

Nitidula sexmaculata Say, 1825, Journ. Acad. N.S. Philad., **5**, 178.

Type: from eastern United States is lost, but there is an autotype from Milton, Mass., May 2, 1829 in the T. W. Harris collection now on deposit in the Museum of Comparative Zoölogy.

Broadly oval to oblong oval, depressed, moderately shining, very finely and sparsely pubescent, pale to dark piceous, margins rufous, each elytron with an irregular H-shaped basal spot and a round spot at apical third rufous, beneath dark rufous. Prothorax twice as wide as long, narrower in front, apex deeply emarginate, base truncate, sides feebly arcuate, hind angles subrectangular, margins broadly explanate, surface covered with rather coarse and very fine punctures intermixed, each puncture bearing a short hair. Elytra conjointly as wide as long in the male, slightly longer than wide in the female, surface rather coarsely punctate, each puncture bearing a short hair. Length 4.5—6.5 mm.

This species occurs at sap (April-Sept., chiefly in July) from New Hampshire (Farmington, Rumney) to Florida, west to Texas (Dallas, Anahuac), Missouri (St. Louis), Kansas (Douglas Co., Topeka), and Iowa (Iowa City); also Santa Barbara, California (U.S.N.M.). Specimens from Beeville, Texas and St. Louis, Missouri (U.S.N.M.) are aberrant in being more oblong, as in *bidentata*. It hibernates beneath logs and under bark.

PROMETOPIA BIDENTATA Schaeffer

Prometopia bidentata Schaef., 1909, Sci. Bull., Mus. Brooklyn Inst., **1**, 375.

Type: no. 42,561 from Arizona (Huachuca Mts.) in the U.S.N.M.

More elongate than *sexmaculata* Say; feebly pubescent; above unicolorous piceous, margins of thorax and elytra pale, legs, antennae, and underside ferruginous. Head coarsely punctate with smaller punctures intermixed. Prothorax twice as wide as long, sides slightly arcuate, narrowing anteriorly, apex less deeply emarginate than in *sexmaculata,* base truncate, hind angles rectangular, margins less widely explanate than in *sexmaculata,* surface covered with intermixed coarse and fine punctures. Elytra slightly longer than wide, sides feebly narrowing to apex, apices separately rounded, margins explanate and slightly reflexed, surface confusedly punctate. Prosternum and metasternum coarsely punctate; abdomen more finely punctate. Middle and hind femora obtusely bidentate. Length 6 mm.

This species differs from *sexmaculata* in being more slender, unicolorous, having narrower margins, and different femora. There is nothing like it in the British Museum.

Aside from the type, *bidentata* is known from a specimen in the California Academy of Sciences from 6000 ft., Mt. Washington, Nogales, Arizona, July.

8. LOBIOPA Erichson

Plates 5, 13

Lobiopa Er., 1843, in Germar, Zeitschr. für Ent., **4**, 291.
Cerophorus (pars) Castelnau, 1840, Hist. Nat. Col., **2**, 10.
Soronia (pars) Reitter, 1873, Verh. Nat. Ver. Brünn., **12**, 46. Horn, 1879, Trans. Am. Ent. Soc., **7**, 306. Genotype: *Lobiopa cimicina* Er.

Body oval, large, depressed. Head large, clypeus indistinct, front lobed over the insertion of the antennae. Antennae a little longer than the head, first segment very greatly widened anteriorly, second short convex, third elongate about as long as next three together, fourth to eighth short, ninth triangular, club oval. Antennal grooves parallel. Labrum feebly bilobed. Mandibles prominent, bifid at tip, no tooth behind the apex. Lacinia short, rounded at tip, heavily bearded. Maxillary palpi with first segment small, third short, second and fourth long about of equal length. Ligula with large paraglossae, palpi incrassate, first segment minute, second clavate, third oval about as long as second. Mentum rectangular, bisinuate anteriorly. Pronotal margins broadly explanate; pronotum about as wide as the elytra. Scutellum small and transverse. Elytra entire, covering the pygidium. not costate; epipleurae not extending around the apices. Prosternal process greatly expanded behind the coxae, truncate posteriorly.

Mesocoxae as far apart as procoxae, metacoxae slightly further apart, First ventral segment as long as next two together, second to fifth about of equal length. Femurs broad; tarsi very feebly dilated. Claws simple. The male eighth dorsal segment visible only from beneath.

Lobiopa is most closely related to *Soronia* but is related also to *Prometopia.*

The genus *Lobiopa* contains about 25 species in the New World and one at Cape of Good Hope. The species are found at sap and fungi or under bark.

Key to Nearctic LOBIOPA

1. Six or seven distinct rows of setae on the disc of each elytron 2
   About nine distinct rows of setae on the disc of each elytron . . *setosa*
2. From above, eyes not as long as pronotal emargination is deep 3
   From above, eyes as long or longer than pronotal emargination is deep 5
3. Distinctly less than twice as long as wide 4
   Twice as long as wide . . . . *oblonga*
4. Submentum finely punctate, length 3.6—5.3 mm . . . . *undulata*
   Submentum coarsely punctate, length 5.3—6.7 mm. . . . . *falli*
5. Above with pubescence, setae, and coarsely punctate, length more than 4.4 mm. 6
   Above nearly glabrous, finely punctate, length 3.5—4.5 mm. . . . . *brunnescens*
6. Lateral margins narrowly explanate . . . . *punctata*
   Lateral margins broadly explanate . . . . *insularis*

LOBIOPA SETOSA Harold

Lobiopa setulosa Leconte (non Erichson), 1863, Smiths. Misc. Coll. **6**, 63.
Lobiopa setosa Harold, 1868, Col. Hefte, **4**, 104.
Soronia undulata (pars) Horn, 1879, Trans. Amer. Ent. Soc., **7**, 307.
Soronia substriata Hamilton, 1893, Can. Ent., **25**, 306.
Types: of *setosa* from Illinois (no. 6972) in the M.C.Z. (Leconte coll.); of *substriata* from Allegheny, Pennsylvania in the Carnegie Museum.

Broadly oval, depressed, finely pubescent, upper surface setaceous, above piceous with margins testaceous and discs of pronotum and elytra with irregular testaceous maculae, beneath dark rufous. Head rather finely densely punctate, pubescent and setaceous, shallowly bi-impressed between the eyes. Eyes not as long as pronotal emargination is deep. Pronotum with very broadly explanate, feebly arcuate lateral margins, hind angles subrectangular, surface closely, rather finely punctate, finely pubescent, sparsely setaceous, the distal half of each seta recurved posteriorly. Prosternal process particularly broad between the coxae. Scutellum transverse. Elytra with broadly explanate, evenly arcuate margins, surface moderately densely and finely punctate; nine more or less distinct rows of setae on each elytron. Beneath finely punctate, finely pubescent. Length 5—6.5 mm., width 3.2—3.5 mm.

This rare species tends to be broader, more depressed, duller, and darker than its closest relative *undulata.* This species occurs (March 21-November) in Massachusetts (Chicopee, Brookline), New York (Staten Island), Pennsylvania (Alleghenny), Washington, D. C., Virginia (Fall's Church), North Carolina, Illinois (Fairbury), Michigan (Detroit), Utah, Washington (Prescott), and British Columbia (Kamloops). In Penn. it was found in May under bark of *Acer rubrum.*

LOBIOPA OBLONGA Parsons

Lobiopa oblonga Pars., 1938, Psyche, **45**, 159, fig. 6.

Type: from Marble Fork Bridge, 3000–5000 ft., Sequoia National Park, California, June 12, 1929; and male allotype, Upper Soda Spring, Siskiyou County, California, Aug. 6, 1906 in the Calif. Acad. Sci. (Van Dyke coll.).

Length twice the width, oblong, oval, feebly convex. Above dull rufo-piceous with faint, irregular, pale maculae. Margins of thorax and elytra rufo-testaceous. Beneath, including antennae and legs, dark rufo-testaceous. Head pubescent; closely, finely punctate; very broadly, shallowly impressed between the eyes. The lobes over the insertion of the antennae more prominent than in all the other North American species except *falli.* Prothorax more emarginate anteriorly than in *brunnescens* but less so than in the other North American species; with broadly explanate, feebly arcuate lateral margins; hind angles rather broadly rounded; hind margin feebly bisinuate; surface closely finely punctate, finely pubescent, sparsely covered with short pale setae. Prosternal process relatively more narrow between the coxae than in the other species. Visible part of scutellum forming an equilateral triangle. Elytra with broadly explanate, feebly arcuate margins; closely, finely punctate; finely pubescent; each elytron with six or seven rows of pale setae. Beneath closely, finely punctate, rather sparsely pubescent. Length of holotype 5 mm., width 2.5 mm.; allotype 4.2 mm., width 2.2 mm.

This species, apparently closest to *falli,* is distinctive in its oblong form. It is less convex than *brunnescens*, *punctata*, and *falli* but more convex than the other species.

This species occurs (June-August) in California. In addition to the two types, there are three specimens in the U.S.N.M. (Lake Tahoe, Idyllwild in the San Jacinto Mts., and one reared Jan. 17 from *Libocedrus decurrens* at Placerville).

LOBIOPA UNDULATA (Say)

Plates 5, figs. 22–28; pl. 13, fig 1

Nitidula undulata Say, 1825, Journ. Acad. N.S. Philad., **5**, 179.
Soronia undulata Horn, 1879, Trans. Amer. Ent. Soc., **7**, 307.
Lobiopa undulata Sharp, 1890, Biol. Centr.-Amer. Col., **2**, pt. 1, p. 321.
Type: from eastern United States is lost.

Broadly oval, feebly convex, feebly shining, finely sparsely pubescent. Above piceous, with more or less faint irregular testaceous maculae. Margins of thorax and elytra testaceous. Beneath, including antennae and legs, rufous. Head not densely punctulate; front shallowly, semicircularly impressed. Prothorax twice as wide as long; sides flatly arcuate; hind angles broadly rounded, the angle itself small, distinct, and retracted; base feebly bisinuate, surface moderrately densely, finely punctate at middle, less densely at sides. Elytra slightly wider than the prothorax, humeral angles feebly dentiform, each elytron with 7 or 8 rows or setae which are strongly, regularly recurved backwards, surface more coarsely punctate than the pronotum. Beneath finely, sparsely punctate. Length 3.6—5.3 mm., width 2.3—3.1 mm.

This species varies considerably in color, shape, and size. It is found at sap in the spring and autumn and hibernates beneath logs.

This species occurs (April-Oct., chiefly in the spring at sap) from Maine to Florida, west to Texas (Harris Co., Alpine, Kerryville, San Diego), Missouri (Mackenzie City), Nebraska (West Pt.), Kansas (Wilson Co., Topeka), Iowa (Burlington), and Manitoba; also a series labelled "Cal." (U.S.N.M.). Sharp's record of *undulata* from "northern Sonora" must be *falli*, since there is Biologia material labelled "Mex." in the B. M. which is *falli*.

LOBIOPA FALLI Parsons

Lobiopa falli Pars., 1938, Psyche, **45**, 161, fig. 7.
Type: from Arizona in the M.C.Z. (Leconte coll.).

More oval than oblong; feebly convex. Above dull rufo-piceous with the margins of the prothorax and elytra rufo-testaceous. Also there are on the upper surface faint, irregular, pale maculae, in particular usually a transverse pale band at the posterior third extending half way across each elytron. This band is more evident in *insularis* and *undulata*. Beneath rufo-piceous with the legs paler. Head with a few, thick, erect setae; pubescent; rather coarsely compactly punctate; alutaceous; with a broad, transverse impression between the eyes; lobes over the insertion of the antennae very prominent, more so than in the other North American species. Eyes of ordinary size. Prothorax as emarginate anteriorly as in *setosa* and *undulata*, more so than in *insularis* in which the prothorax is more emarginate than in *oblonga*. Prothorax with lateral margins broadly explanate, evenly and flatly arcuate, narrowing shortly before the acute hind angles; hind margin distinctly bisinuate; surface closely and rather coarsely punctate, alutaceous, pubescent, sparsely covered with thick setae. Visible part of scutellum forming a strongly transverse triangle. Elytra with broadly explanate margins; rather close, coarse, obsolete punctures; alutaceous; finely pubescent; each elytron with about seven rows of thick setae. Beneath coarsely punctate, sparsely and finely pubescent. Length 5.3—6.7 mm., width 3.1—4.1 mm.

This species varies in outline and in color. In the pale specimens the maculation is most evident, whereas in those that are piceous the maculation is not discernible. The species is distinctive in the prominent lobes over the insertion of the antennae, transverse scutellum, and the unusual covering of thick setae. It is apparently related to *undulata*; in fact there are specimens from Texas in the Fall collection which approach *falli* in the maculation, setae, and frontal lobes. But in *falli* the scutellum is more transverse, punctures beneath more coarse, and shape usually more oval.

The range of *falli* is central and southern Arizona east to Alpine, and Chisos Mts., Texas (May-August).

LOBIOPA BRUNNESCENS (Blatchley)

Soronia brunnescens Blatch., 1917, Can. Ent., **49**, 238.

Type: from Dunedin, Florida (June 10) at Purdue University (Blatchley coll.) and a paratype is in the U.S.N.M.

Oblong, oval, moderately convex. Uniformly pale reddish-brown, legs slightly paler. There may be a trace of maculation which is like that of *insularis.* Head finely, sparsely punctate, broadly impressed between the eyes. Prothorax two-thirds wider than long, apex broadly and shallowly emarginate; sides flatly, evenly arcuate, hind angles obtuse, lateral margins moderately broadly explanate, surface sparsely and evenly punctate. Elytra slightly wider than the prothorax, margins evenly arcuate and more broadly explanate than the pronotum, punctate like the pronotum, surface glabrous. Abdomen minutely pubescent, finely and densely punctate. Length 3.5 mm.

Specimens from Louisiana have the pronotum slightly more coarsely punctate than in the types. See under *punctata* for comparisons with the nearest relative of *brunnescens*. Aside from the type locality *brunnescens* is known from Covington, Louisiana, June 13 and Martha's Vineyard, Mass., Aug. 31, 1931 in the New England Museum of Natural History.

LOBIOPA PUNCTATA Parsons

Lobiopa punctata Pars., 1938, Psyche, **45**, 163, fig. 4.
Type: from Miami, Florida in the M.C.Z. (Fall coll.).

Oblong oval, rather strongly convex, shining, rufo-testaceous above and beneath. Head sparsely pubescent, closely, coarsely punctate; broadly impressed between the eyes; frontal lobes more transverse than in the other North American species. Prothorax as emarginate in front as *brunnescens*, therefore less emarginate than in the other North American species; lateral margins narrowly explanate and evenly arcuate; hind angles broadly rounded, the angle itself obtuse; hind margin feebly bisinuate; surface closely, coarsely punctate, with sparse pubescence and sparser small setae. Prosternal process only slightly reflexed behind the coxae. Elytra with narrowly explanate, feebly arcuate lateral margins; eight rows of small setae on each elytron; finely pubescent; each elytron with two pale spots extending across anterior median angle, a transverse pale band across inner half at posterior third, and center somewhat darker. Beneath closely, coarsely punctate, finely pubescent. Length 5.2—4.5 mm., width 3.1—2.5 mm.

Described from four males; holotype and paratype from Miami, Florida, March 11, 1924 in the M.C.Z. (Fall coll.); one paratype from Miami, Florida, March 31, in the Calif. Acad. Sci. (Van Dyke coll.); and a paratype from Balaclava, Jamaica, A. E. Wright in the M.C.Z.

This species is apparently closest to *brunnescens*, particularly in the convexity of the body, and degree of emargination of the pronotum. It differs from *brunnescens* in its larger size, much coarser punctation and pubescence, narrower lateral margins, and in the prosternal process being only slightly arched longitudinally between the coxae; whereas in *brunnescens* the prosternal process is strongly arched between the coxae and reflexed posteriorly.

LOBIOPA INSULARIS (Castelnau)

Nitidula insularis Cast., 1840, Hist. Nat. Col., **2**, 10 (*Cerophorus*).
Lobiopa contaminata Er., 1843, in Germar, Zeitschr. für Ent., **4**, 296.
Lobiopa decumana Er., loc. cit., p. 295.
Lobiopa dimidiata Er., loc. cit., p. 295.
Lobiopa grandis Er., loc. cit., p. 294.
Types: of *insularis* from Cuba probably in the Paris Museum; of *contaminata* (Brazil), of *decumana* (Cuba), of *dimidiata* (St. Thomas, Antilles, Colombia), of *grandis* (Para, Brazil) all in the Berlin Museum.

Oval, feebly convex, moderately shining, finely sparsely pubescent. Color dark rufous except that the discs of the pronotum and elytra are piceous broken by rufous spots, particularly by a pale band. Head very shallowly, semicircularly impressed between the eyes, sparsely, rather coarsely punctate. Prothorax nearly twice as wide as long, lateral margins broadly explanate, feebly arcuate, hind angles obtuse, hind margin feebly bisinuate, surface rather coarsely, sparsely punctate, disc covered with straight, subclavate setae. Elytra more vaguely, coarsely punctate than the pronotum, margins broadly explanate, each elytron with 7 rows of nearly straight, obliquely set, subclavate setae. Beneath very finely sparsely punctate. Length 5—6.5 mm., width 3.2—4.1 mm.

As the synonymy indicates, *insularis* is a highly variable species. It is more shining than usual, has distinctive setae, and is more oval than *undulata*.

This species occurs (May-November) from Georgia (Savannah, Valdosta) to Florida (Orange Co.), west through Alabama (Mobile, Kushla) to Texas (Harris Co., Brownsville), south through Central America and the West Indies to Colombia and Brazil.

9. SORONIA Erichson

Plate 6

Soronia Er., 1843, in Germar, Zeitschr. für Ent., **4**, 277.
Genotype: *Nitidula punctatissima* Illiger. (cf. Plate 6, figs. 1–7).

Oblong, oval, large, depressed. Head large, clypeus indistinct, front lobed over the insertion of the antennae. Antennae longer than the head, first segment greatly widened anteriorly, second short convex, third elongate about as long as fourth and fifth together, sixth to eighth short, ninth trapezoidal, club oval. Antennal grooves strongly convergent posteriorly. Labrum large, feebly bilobed or emarginate. Mandibles with simple apex, an acute cusp behind the tip, bearded. Lacinia short, rounded at tip, and heavily bearded. Maxillary palpi with first segment small, second long, slightly clavate, third short, fourth as long as the second and third together. Ligula with large paraglossae, palpi incrassate, first segment minute, second subclavate, third enlarged, longer than the second. Mentum transverse, bisinuately emarginate in front. Pronotal margins broadly explanate; pronotum about as wide as the elytra. Visible part of scutellum small, not very transverse. Elytra entire, covering the pygidium, feebly costate, epipleurae may extend to the suture. Prosternal process greatly expanded behind the coxae, truncate posteriorly. Mesocoxae as far apart as procoxae, metacoxae twice as far apart as mesocoxae. First ventral segment not as long as the next two together, second to fifth about of equal length. Femurs broad, tarsi very feebly dilated, claws simple. The male eighth dorsal segment small, visible from beneath.

Soronia is nearest to *Lobiopa* but is more oblong, and has different antennal grooves, mentum, antennae, etc.

The genus *Soronia* contains about 30 species, generally distributed in the Old World, but only three species are known from the New World, one each from North America, Brazil, and Mexico to Brazil. In temperate regions at least the beetles occur at sap under the bark of deciduous trees.

SORONIA GUTTULATA (Leconte)

Lobiopa guttulata Lec., 1863, Smiths. Misc. Coll., **6**, 64.

Type: described from a specimen collected by Ulke in Illinois. In the Leconte collection (M.C.Z.) there is no specimen from Illinois but there is one from Canada bearing the Leconte's name label and labelled "type, 6970.

Elongate oval, feebly convex, feebly shining, finely, sparsely pubescent. Dark rufous, head and discs of the pronotum and elytra piceous, broken by more or less vague pale maculae, particularly a testaceous band across inner half of each elytron at posterior three-fifths. Head with sinuous impression between the eyes, rather densely, finely punctate. Prothorax slightly less than twice as wide as long, narrowed in front, apex broadly, rather deeply emarginate, margins broadly explanate, feebly arcuate, slightly sinuate just before the sub-rectangular hind angles, base feebly bisinuate, disc with about four vague foveae on each side and sometimes a median impression, surface moderately densely finely punctate. Elytra slightly broader than the prothorax, margin moderately broad, slightly reflexed, each elytron with about five vague costae, surface more sparsely punctate than the pronotum. Beneath densely punctate, prosternum sparsely punctate. Length 5—6 mm., width 2.8 mm.

This rare species occurs usually under the bark of *Pinus ponderosa* (April-Oct.) in Canada (probably Ottawa), New York, Pennsylvania, Michigan, Iowa, Montana (Columbia Falls, reared Oct. 24 at Lamedeer), Idaho (Stiles, Smith's Ferry), Colorado (Evergreen), Nevada, Arizona (Santa Catalina Mts.), California (McCloud, Carrville, Facht, Lookout, Monterey Co., Jan. 6, under bark of *Pinus radiata*).

10. PHENOLIA Erichson

Plates 6, figs. 8–15; pl. 12, fig. 18

Phenolia Erichson, 1843, in Germar, Zeitschr. für Ent., **4**, 299.
Genotype: *Nitidula grossa* Fabr.

Elongate oval, moderately convex, large. Head large, feebly impressed between the eyes, clypeus indistinct, front not lobed over the insertion of the antennae. Antennae longer than the head, first segment strongly convex, widened anteriorly but not auriculate, second short but only slightly more convex than the next, third to eighth becoming progressively shorter, club abrupt and compact. Antennal grooves deep, parallel. Labrum feebly bilobed. Mandibles bifid at tip, not toothed on inner side, feebly bearded. Lacinia short, rounded at tip, heavily bearded. Maxillary palpi with first segment small, second clavate, third short, fourth as long as second and third together. Paraglossae short and transverse, palpi incrassate, first segment minute, second clavate, third as long as the second and thick. Mentum feebly, bisinuately emarginate in front. Pronotal margins broadly explanate; pronotum not as wide as the elytra. Scutellum small, not strongly transverse. Elytra entire, covering the pygidium; feebly costate; epipleurae extending to the apex of the elytra but not to the suture. Prosternal process broad between the coxae, expanded and truncate behind. Procoxae and mesocoxae equally far apart, metacoxae twice as far apart as the mesocoxae. First ventral segment as long as the next two together, second to fifth of equal length. Anterior tarsi feebly, middle more feebly, and posterior very feebly dilated. Claws simple. Male eighth dorsal segment visible only from beneath.

Phenolia is most closely related to *Soronia*. Unfortunately the Madagascan *Ornosia* and *Idosoronia* are unknown to the writer.

The genus *Phenolia* consists only of one eastern Nearctic species, found beneath bark and in fungi.

Phenolia grossa (Fabricius)

Nitidula grossa Fabr., 1801, Syst. Eleuth., **1**, 347.
Type: from "Carolina" presumably in the Paris Museum (Bosc coll.).

Elongate oval, nearly glabrous, feebly shining, moderately convex· Dark rufo-piceous, elytra, except margins, darker with rufous spots· Head with very coarse, shallow punctures. Prothorax less than twice as wide as long, apex a little narrower than base, margins broadly explanate, slightly reflexed, moderately arcuate, slightly sinuate before the subrectangular hind angles, base feebly bisinuate, disc faintly impressed on each side of middle, alutaceous, coarsely and finely punctate. Elytra with rather narrow margins, each elytron with seven feeble costae, a row of fine punctures, each bearing a short hair, along each costa, the intervals vaguely, biseriately, coarsely punctate. Beneath densely, prosternum less densely, punctate. Length 6—8.5 mm.

This species occurs (April-Sept.) from Ontario (Toronto) and Maine to North Carolina (Asheville, Retreat), and Alabama (Wadley), west to Texas, Missouri (St. Louis), Arkansas (Hope), Iowa (Mt. Pleasant, Guttenberg), and Minnesota (Itaska Park); also Wyoming.

11. Amphotis Erichson

Amphotis Er., 1843, in Germar, Zeitschr. für Ent., **4**, 290.
Soronia (pars) Horn, 1879, Trans. Amer. Ent. Soc., **7**, 287.
Genotype: *Nitidula marginata* Fabr.

Elongate oval, moderately convex, large. Head moderately large, clypeus indistinct, front broadly lobed over the insertion of the antennae. Antennae as long as the head, first segment strongly convex, widened anteriorly but not auriculate, second short and convex, third narrow, third to eighth progressively more convex and shorter, club rather small, oval, compact. Antennal grooves deep, parallel. Labrum large, feebly bilobed. Mandibles with simple apex, an acute cusp behind the tip, feebly bearded. Lacinia short, rounded at tip, heavily bearded. Maxillary palpi with first segment minute, second short and clavate, third slightly shorter than the second, fourth as long as the first three together. Ligula with very small paraglossae, palpi moderately incrassate, first segment minute, second clavate, as long as the third. Mentum deeply emarginate and strongly bisinuate in front. Pronotal margins broadly explanate; pronotum nearly as wide as the elytra. Scutellum small, moderately transverse. Elytra entire, covering the pygidium, costate; epipleurae extending to the suture. Prosternal process greatly expanded behind the coxae, truncate posteriorly. All the coxae equally far apart. First ventral segment at middle as long as the next two together, second to fifth about of equal length. Tarsi very feebly dilated; claws simple. Male eighth dorsal segment small, visible from beneath.

Grouvelle places *Amphotis* among tropical Old World genera unknown to the writer.

The genus contains three Palaearctic and two Nearctic species, which are mainly myrmecophilous, but are also found under bark at fungi or on flowers.

Each elytron with six long costae . . . . *ulkei*
Each elytron with eight long costae . . . . *schwarzi*

AMPHOTIS ULKEI Leconte

Plates 7, figs. 1–8; pl. 13, fig. 2

Amphotis ulkei Lec., 1866, Proc. Acad. N. S. Philad., p. 376.
Soronia ulkei Horn, 1879, Trans. Amar. Ent. Soc., **7**, 307.
Type: lectotype no. 6971 from Washington, D. C. and a cotype from Massachusetts in the M.C.Z. (Leconte coll.); cotype presumably in the Carnegie Museum (Ulke coll.).

Elongate oval, depressed, feebly shining, nearly glabrous. Testaceous to chestnut brown, sometimes a faint rufous band on elytra at posterior three-fifths; discs of pronotum and elytra tending to be darker. Head not impressed, densely rather finely punctate. Prothorax one and one-half times as broad as long, narrowed in front, apex very deeply emarginate, base very feebly bisinuate, margins broadly explanate, feebly arcuate, hind angles subrectangular, surface densely, rather finely punctate, sometimes very sparsely pubescent. Elytra slightly wider than the pronotum; humeral angles slightly dentiform; margins broad and reflexed; with a sutural and five discal costae; along each costa is a row of fine punctures each of which bears a pale, recumbent hair; the intervals irregularly, transversely, coarsely punctate; margin more sparsely and finely punctate. Beneath densely, prosternum less densely, punctate. Length 6–7.5 mm.

This species occurs (April–Oct.) from Massachusetts (West Chop, Tyngsboro, Springfield) to North Carolina (Welton) and South

Carolina (Long Creek); also "Texas" (U.S.N.M.) in the nests of *Formica schaufussi, F. integra, F. truncicola obscuriventris,* and *Crematogaster lineolata.* It is strictly myrmecophilous in the early spring but in the fall of the year is found in decaying fungi.

AMPHOTIS SCHWARZI Ulke

Amphotis schwarzi Ulke, 1887, Ent. Amer., **3**, 77.

Type: from Ft. Monroe, Virginia (June 17) in the Carnegie Museum (Ulke coll.).

Similar to *ulkei.* Color testaceous to dark rufo-piceous. Differs from *ulkei* as follows: somewhat less oval, smaller, sides of prothorax more flatly arcuate, margins of elytra more narrow and less reflexed, eight instead of six elytral costae, and the mentum narrower and less emarginate in front. Length 5–5.2 mm.

This species occurs (June, Dec., Feb., March) from Virginia (Ft. Monroe) through North Carolina (Southern Pines), South Carolina, Georgia (Atlanta), to Alabama (Spring Hill, Mobile, Langdale, Chambers Co.).

12. THALYCRA Erichson

Plate 7, figs. 9–16; pl. 13, fig. 4

Thalycra Er., 1843, in Germar, Zeitschr. für Ent., **4**, 305.
Genotype: *Nitidula fervida* Oliv.

Oblong oval, moderately small, convex, sparsely pubescent. Head moderately small, clypeus indistinct, prolonged at middle, sides parallel; front not lobed or impressed. Antennae longer than the head, first segment strongly convex, second short, convex, as long as the third, fourth to seventh shorter, eighth short and very strongly transverse, club strongly convex, nearly round, and closely coadapted. No antennal grooves distinctly defined. Labrum large, bilobed. Mandibles with simple apex, a large, acute cusp behind and sometimes very near the tip, feebly bearded. Maxillary palpi with first segment minute, second rather short and clavate, third shorter than the second, and the fourth tapering as long as the second and third together. Ligula with large laterally projecting paraglossae, palpi incrassate, first segment small, second long and clavate, third a little longer than the second, oval, truncate at tip. Mentum rectangular; feebly, arcuately emarginate in front. Prothorax nearly as broad as the elytra, margins very narrow. Elytra entire, exposing only the tip of the pygidium. Scutellum rather large, triangular. Epipleurae extend to the elytral apices. Prosternal process expanded and strongly reflexed dorsad behind the coxae. Mesosternum not carinate. Coxae all about equidistant. First ventral segment about as long as next two together. Fifth ventral segment nearly as long as preceding two, segments two to four of equal length. Anterior tibiae triangularly dilated (less so in the female), the outer apical angle dentiform; middle and posterior tibiae spinulose externally and at tip. Anterior tarsi very broadly dilated, middle less broadly and the posterior tarsi feebly dilated. Claws simple. Male eighth dorsal segment small, visible from behind.

Thalycra is very closely related to *Perthalycra.* Comparisons will be found under the latter genus. It is also closely related to *Xenostrongylus, Neothalycra, Thalycrodes,* and perhaps other genera.

The genus is found by sweeping grass and flowers in late afternoon, also at sap under bark, or in fungi.

Thalycra contains one species in north and middle Europe and one very rare species in the United States and Canada.

THALYCRA CONCOLOR Leconte

Thalycra concolor Lec., 1850, in Agassiz, Lake Superior, p. 223.
Type: no. 6980 from the north shore of Lake Superior in the M.C.Z. (Leconte coll.).

Oblong oval, convex, moderately shining, sparsely pubescent. Color uniformly rufo-ferruginous. Head sparsely punctate in the center. Prothorax a little less than twice as wide as long, narrower in front, base very feebly bisinuate, apex very feebly emarginate, lateral margins very narrow, finely fimbriate, hind angles obtuse, surface densely, rather finely punctate. Elytra conjointly with width to length as 1 to 1.2, margins finely fimbriate, surface as coarsely punctate as the pronotum but less densely, the punctures becoming rapidly finer until they are obsolete near the apex. Prosternum very sparsely finely punctate. Mesosternum and abdomen coarsely and moderately densely punctate. Length 3.2–3.5 mm.

This species is very near the European species and would be considered the same as *ferrida* if the two species were not so completely isolated from each other. However, *concolor* is somewhat more sparsely punctate and the elytra are slightly more attenuate apically.

In addition to the male type, the writer has seen a specimen from

Det[roit, Michigan], September in the U.S.N.M. Ulke, 1902, records one specimen from the District of Columbia; presumably it is in the Carnegie Museum (Ulke coll.).

13. PERTHALYCRA Horn

Plates 7, figs. 9–16; pl. 13, fig. 5

Perthalycra Horn, 1879, Trans. Amer. Ent. Soc., **7**, 309.
Genotype: *Perthalycra murrayi* Horn.

Similar to *Thalycra* but differing as follows. Clypeus is a little more distinct. Antennae with eighth segment not so strongly transverse; club more abrupt and compact. Anterior tibiae more slender apically, with apical margin dentate posteriorly, anterior margin more or less distinctly bidentate at middle; middle and posterior tibiae more strongly spinulose. Lacinia is relatively longer and the mentum is less emarginate in front. Anterior tarsi moderately dilated in the male only; middle and hind tarsi not dilated.

Perthalycra is very closely related to *Thalycra* since most of the differences are hardly of generic importance.

The habits are probably the same as in *Thalycra*.

Apical angle of anterior tibiae bifid . . . . *murrayi*
Apical angle of anterior tibiae simple . . . . *carolina*

PERTHALYCRA MURRAYI Horn

Perthalycra murrayi Horn, 1879, Trans. Amer. Ent. Soc., **7**, 310.
Type: from San Francisco, California, Oregon, and western Nevada, cotypes in the M.C.Z. (Leconte coll.) and the Philadelphia Acad. of Nat. Sciences.

Oblong oval, convex, feebly shining, sparsely pubescent. Color usually castaneous but may be pale testaceous or piceous. Head and pronotum densely, moderately coarsely punctate. Prothorax with width to length as 1.5 to 1, narrowed in front, apex feebly emarginate, sides very narrowly margined, moderately arcuate, finely fimbriate, hind angles obtuse, surface densely, rather coarsely punctate. Elytra conjointly with width to length as 1 to 1.2, apices feebly truncate, margins finely fimbriate, surface more sparsely and finely punctate than the pronotum. Beneath moderately densely punctate; the prosternum very sparsely punctate. Length 3–5 mm.

Although *murrayi* varies considerably in size, color, convexity, and punctation, all gradations are apparent. An example in the Fall collection has the prosternum rather densely punctate.

This species occurs (May–Sept.) from British Columbia (Kaslo) and Alberta (Jasper) through Montana (Gallatin Co., Bear Paw Mts., Cooke), Idaho, Washington (Longmire, Mt. Bonaparte, Lake Crescent), Oregon, to California (generally distributed), Nevada (Lake Tahoe), Arizona (Prescott, McNary, 7200 ft., White Mts., Gila Co., 7200–11000 ft.), New Mexico (Rincau, Pecos, Las Vegas Hot Springs), Colorado (Copeland Park, Boulder Co.), and Wyoming (Nat. Park).

PERTHALYCRA CAROLINA Wickham

Perthalycra carolina Wickham, 1920, Proc. Ent. Soc. Wash., **22**, 233.
Type: no. 23,727 from Southern Pines, North Carolina and paratype from Pensacola, Florida in the U.S.N.M.

Oblong oval, convex, moderately shining, sparsely pubescent. Color yellowish testaceous to castaneous. Sometimes the head is darker and rarely each elytron has an obsolete, dark, discal spot. Head sparsely, finely punctate. Prothorax with width to length as 1.7 to 1, narrowed in front, apex feebly emarginate, sides very narrowly margined, moderately arcuate, finely fimbriate, hind angles obtuse, surface sparsely, rather finely punctate. Elytra conjointly with width to length as 1 to 1.3, margins fimbriate, slightly more sparsely punctate than the pronotum. Beneath sparsely punctate; prosternum smooth (sparsely punctate in the Maryland specimen). Length 3.5–4.5 mm.

This species differs from *murrayi* in the apical angle of the anterior tibiae being simple not bifid (feebly bifid in the Maryland specimen), the apex of the pronotum slightly more strongly emarginate, more finely and sparsely punctate above, more sparsely punctate beneath, and in the usually smooth prosternum.

This rare species occurs from Maryland (Glen Echo in the U.S.N.M.) through North Carolina (Southern Pines, Nov. 23, in the U.S.N.M. and M.C.Z.: Fall coll.), "Ga." in the M.C.Z.: Fall coll., to Florida (Pensacola, Dec. 5, in the U.S.N.M. and Ormond in the A.M.N.H.).

14. QUADRIFRONS Blatchley

Quadrifrons Baltch., 1916, Can. Ent., **48**, 92.
Genotype: *Quadrifrons castaneus* Blatch.

Labrum small, its front edge broadly rounded, not emarginate. Front and clypeus projecting abruptly from head, subquadrate, its sides parallel. Last joint of maxillary palpi oblong-cylindrical. Head without antennal grooves. Antennae reaching middle of thorax, first joint robust, obconical, second oval, one-length of third, which is slender and clavate; 4–8 short, as wide as long, closely united; club large, subglobose, 3-jointed, the sutures distinct, the two basal joints subequal, strongly transverse, the last joint obtusely conical, smaller but distinct. Eyes small, very prominent, coarsely granulated. Prosternal spine prolonged and convex between the coxae, then abruptly bent downward; mesosternum not carinate. Front tibiae with outer apical angle greatly prolonged in the form of a large triangular tooth, the outer sharp edge of the tibiae behind this projection curved and minutely serrate, the inner apical angle with a short spine. Middle and hind tibiae each armed at apex with two short, slender spines, their outer angles more or less produced, front tarsi feebly dilated, middle and hind ones slightly broadened; claws simple.

Related to *Perthalycra,* but the front more abrupt, labrum not bilobed, prosternum bent abruptly downward behind the front coxae and structure of front tibiae radically different.

QUADRIFRONS CASTANEUS Blatchley

Quadrifrons castaneous Blatch., 1916, Can. Ent., **48**, 92–93.
Type: from Dunedin, Florida at Purdue University (Blatchley coll.) at Lafayette, Indiana.

Oblong-oval, convex. Above dark reddish or chestnut-brown, rather thickly clothed with slender, prostrate golden-yellow hairs, those along the margins of thorax, elytra and legs longer and erect, forming a fringe; antennae, legs, and under surface somewhat paler reddish-brown. Head nearly three times as wide as front, finely and sparsely granulate. Thorax convex, more than twice as wide as long, sides broadly rounded, apex feebly and broadly emarginate, base truncate, hind angles rounded; disc minutely alutaceous, finely and sparsely granulate-punctate, each puncture bearing a prostrate yellow hair. Scutellum very large, semi-oval, its apex broadly rounded. Elytra oblong, convex, scarcely as wide as the middle of thorax, one-third longer than wide, sides very feebly curved to apical fifth, then broadly rounded into the subtruncate apex, disc not striate, sculptured and pubescent like the thorax. Pygidium rather widely exposed, finely and sparsely granulate-punctate. Abdomen finely and rather closely punctate. Length 3.2 mm.

This rare species was collected on April 5 beneath a decaying woody fungus at Dunedin, Florida. Since it is unknown to the writer, the generic and specific description is copied from Blatchley.

15. Pocadius Erichson

Plates 8, 13

Pocadius Er., 1843, in Germar, Zeitschr. für Ent., **4**, 318.
Genotype: *Nitidula ferrugineus* Fabr.

Broadly oval, convex, sparsely pubescent. Head broad, clypeus moderately distinct. Antennae as long as the head, first segment large and convex, second moderately convex, as long as the third, third to fifth more slender, six to eighth strongly transverse, club large, oval, and compact. Antennal grooves deep and convergent. Labrum rather prominent, feebly bilobed. Mandibles with simple apex, an acute tooth behind the tip, feebly bearded. Lacinia rather short, rounded at tip, moderately heavily bearded. Maxillary palpi with first segment minute, second long and subclavate, third short, fourth as long as the second and third together. Ligula with laterally projecting paraglossae, palpi slender, first small, second subclavate, as long as the third. Mentum rectangular, feebly emarginate in front. Prothorax not as broad as the elytra. Elytra entire but exposing the pygidium; epipleurae broad and attaining the apices. Scutellum long. Prosternal process convex between the coxae; tip with conical protuberance. Mesosternum not carinate. Coxae all about equidistant. First and fifth ventral segments of equal length, each as long as second and third combined, second to fourth of equal length. Anterior tibiae slender, outer apical angle spiniform; middle and posterior tibiae finely spinulose externally. Tarsi all slender, claws simple. Male eighth dorsal segment visible from above.

This genus is not very closely related to any other in the Nearctic region, but it is near various old world genera, such as *Macroura*, *Pocadites*, and *Pocadiodes;* and so probably originated in Asia.

In addition to the four Nearctic species of *Pocadius*, there are known seven from Asia, two from Brazil, and one each from Argentina, Cuba, Europe, and Africa. The species are found in the puff-balls, *Lycoperdon* spp.

Key to Nearctic POCADIUS

1. Prosternum in profile strongly arcuate . . . . *fulvipennis*
   Prosternum in profile moderately arcuate or nearly plane 2
2. Prosternum behind the coxae plane, not deflexed . . . . *basalis*
   Prosternum behind the coxae more or less deflexed 3
3. Pronotum black with hind angles obtusely rounded . . . . *niger*
   Pronotum testaceous to piceous, hind angles acutely rounded . . . . *helvolus*

POCADIUS FULVIPENNIS Erichson

Plate 8, fig. 11

Pocadius fulvipennis Er., 1843, in Germar, Zeitschr. für Ent., **4**, 319.
Pocadius dorsalis Horn, 1879, Trans. Amer. Ent., **7**, 311.
Types: of *fulvipennis* from Mexico in the Berlin Museum; of *dorsalis* from California, a cotype no. 7966 in the M.C.Z. (Leconte coll.) and a cotype in the Philad. Acad. Nat. Sciences.

Oval, moderately convex, moderately shining, sparsely pubescent. The color varies from black with a red basal spot on each elytron to testaceous. Head coarsely, rather densely punctate. Prothorax twice as wide as long, narrowed in front, apex feebly emarginate, base arcuate at middle sinuate at sides, sides feebly arcuate, narrowly explanate, hind angles subrectangular, surface sparsely covered with coarse and fine punctures. Elytra conjointly with width to length as 1 to 1.1, sutural angles not dentiform, surface with ten rows of closely placed, but feebly impressed quadrate punctures, intervals flat with a single series of fine punctures. Length 2.5–4.2 mm.

This beetle is less oval, more depressed, and differently colored than *helvolus*. Its range is (April–June, March 17) Washington (Olympia, Seattle) to California (Marin Co., Trinity Co., Los Angeles Co.) and it is found in the puff-ball *Lycoperdon giganteum*.

POCADIUS BASALIS Schaeffer

Plate 8, fig. 8

Pocadius basalis Schaef., 1911, Journ. New York Ent. Soc., **19**, 117.
Type: from the Huachuca Mts., Arizona, August 29 in the U.S.N.M.; a paratype in the M.C.Z. (Liebeck coll.).

Broadly oval, moderately convex, moderately shining, sparsely pubescent. Color reddish-brown, apical two-thirds of elytra sometimes darker. Head coarsely, rather sparsely punctate. Prothorax with width to length as 1.8 to 1, narrowed in front, apex feebly emarginate, base very feebly sinuate at sides, sides moderately arcuate, very narrowly explanate, hind angles subrectangular, surface sparsely covered with coarse and fine punctures. Elytra with width to length as 1 to 1.2, sutural angles feebly dentiform, surface with ten rows of rather closely placed, shallow, oval punctures, intervals flat with a single series of fine punctures. Length 3.8 mm.

The punctation of the pronotum is coarser than in *helvolus* and *fulvipennis;* the pronotal sides are more arcuate than in *fulvipennis;* but *basalis* is about as convex as the latter and less so than in the other species.

This rare species is known from the holotype and three paratypes from the type locality, and one without label in the U.S.N.M., a paratype from Palmerlee, Cochise Co., Arizona, Aug. 29 in the M.C.Z. (Liebeck coll.) and a specimen evidently collected with the types in the writer's collection (ex Leng coll.).

POCADIUS NIGER Parsons

Plate 8, fig. 10

Pocadius niger, Pars., 1936, Psyche, **43**, 116–117.

Type: from Las Vegas Hot Springs, New Mexico, June 8 in the U.S.N.M.; paratypes in the M.C.Z. (general coll., Fall coll.) and in the writer's collection.

Broadly oval, convex, moderately shining, sparsely pubescent. Head and pronotum black, elsewhere dark piceous except for a somewhat triangular reddish brown spot on each elytron. Head coarsely, rather densely punctate. Prothorax with width to length as 1.8 to 1, narrowed in front, apex feebly emarginate, base very feebly sinuate, sides moderately and evenly arcuate, very narrowly explanate, hind angles obtusely rounded, surface sparsely covered with coarse and fine punctures. Elytra conjointly with width to length as 1 to 11, sutural angles feebly dentiform, each elytron with ten rows of oval, shallow punctures, intervals flat, irregularly biseriately punctulate. Length 3.2–4.3 mm.

The color and the irregular biseriate elytral punctation (also in *helvolus*) will at once distinguish this species. Also the hind angles of the pronotum are more obtuse than usual, and the pronotum is slightly more convex even than in *helvolus*.

The range is (June–August) New Mexico (Las Vegas Hot Springs) and Arizona (Pinal Mts., Sierra Ancha Mts.).

POCADIUS HELVOLUS Erichson

Plate 8, figs. 1–7, 9; pl. 13, fig. 15

Pocadius helvolus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 320.
Pocadius breviusculus Reitter, 1876, Stettiner Ent. Zeit., **37**, 318.
Pocadius infuscatus Reitter, 1874, Verh. Nat. Ver. Brünn, **12**, 94.
Pocadius limbatus Reitter, 1874, Verh. Nat. Ver. Brünn, **12**, 95.
Types: of *helvolus* from eastern United States in the Berlin Museum; of *breviusculus* from North America in the Paris Museum; of *infuscatus* from North America presumably in the National Museum at Budapest (Reitter coll.); and of *limbatus* from North America presumably in the Mus für Naturkunde at Stettin.

Broadly oval, convex, moderately shining, sparsely pubescent. Color usually ferrugineous but varies from pale testaceous to dark ferrugineous with the elytra black except at median basal third. Prothorax with width to length as 1.9 to 1, narrowed in front, apex feebly emarginate, base sinuate on each side, sides feebly arcuate, very narrowly explanate, hind angles subrectangular, surface rather densely covered with coarse shallow punctures intermixed with fine punctures. Elytra conjointly with width to length as 1 to 1.1, sutural angles more or less feebly dentiform, each elytron with ten rows of vaguely impressed punctures, the intervals very slightly convex, irregularly biseriately punctulate. Length 3–4 mm.

This species varies considerably in convexity, punctation, and color. Horn, 1879, who saw Reitter's types, says that *breviusculus* is a small form found in the Gulf States, *infuscatus* merely a stained specimen, and *limbatus* a color variety. Some of the *limbatus* variety (with darkened elytra) tend to be less convex than usual. The writer, 1936, recorded *helvolus* from Cuba because *limbatus* and *infuscatus* are so listed by Grouvelle, 1913. Since then the writer has collected in Cuba a *Pocadius* which agrees with Reitter's description of *brevis*. The Cuban species varies as much as *helvolus* and may possibly be the same as *breviusculus*, but for the present it is best to exclude *helvolus* from Cuba.

This species occurs (June–September) from Connecticut (Stamford) and New York (West Point) to Georgia (Thomasville) west to eastern Texas (Columbus, Houston), Kansas, Nebraska, Montana, British Columbia, north to Manitoba (Aweme) and south into Mexico (Puente de Ixtla, Durango, Guanajuata).

16. CAMPTODES Erichson

Plates 8, 13

Camptodes Er., 1843, in Germar, Zeitschr. für Ent., **4**, 321–322.
Genotype: *Sphaeridium scutellatum* Sturm.

Broadly oval, convex, glabrous. Head broad, clypeus moderately distinct. Antennae longer than the head, first segment large and convex, second moderately convex about as long as the third, third to fifth slender about of equal length, sixth to eighth shorter and progressively thicker, club broadly oval. Antennal grooves deep, parallel. Labrum not prominent, bilobed. Mandibles with simple apex, a tooth behind the apex, moderately bearded. Lacinia rather short and slender, rounded at tip, heavily bearded. Maxillary palpi with first segment minute, second subclavate, third short, fourth slender and as long as the second and third combined. Ligula small and narrow, paraglossae laterally projecting, palpi with first segment small, second long and clavate, third as long as the second. Mentum transverse, bisinuately emarginate in front. Prothorax as broad as the elytra. Elytra entire, but exposing the tip of the pygidium. Epipleurae broad, barely attaining the apices. Scutellum large and broad. Prosternal process more or less flat, expended behind the coxae. Mesosternum carinate. Coxae all about equidistant. First ventral segment as long as the next three together, fifth one and one-half as long as the fourth. Anterior tibiae slender, outer apical angle simple. Tarsi broadly dilated, claws simple or toothed. Male eighth dorsal segment visible from behind.

Grouvelle places *Camptodes* between *Amphicrossus* and *Idaethina*. The latter is unknown to the writer, but the former is certainly more closely related to *Camptodes* than any other Nearctic genus.

Camptodes comprises about 160 tropical American species which occur on flowers. One is found in southern Arizona and three (one still unnamed) in extreme southeastern Texas.

1. Pygidium ferrugineous to piceous 2
   Pygidium testaceous to rufous .... *texanus*
2. Color testaceous to dark rufo-piceous, humeri feebly pronounced .. .. *gaumeri*
   Color jet black, humeri moderately pronounced ...... *nigerrimus*

CAMPTODES (EUCAMPTODES) TEXANUS Schaeffer

Plate 13, fig. 7

Camptodes texanus Schaef., 1904, Journ. New York Ent. Soc., **12**, **203**.
Type: described from two cotypes (no. 42,559) from Brownsville, Texas in the U.S.N.M.

Very broadly oval, rather strongly convex, shining, glabrous. Color dark fuscous to black, sometimes rufous or fading to rufous at the sides of the pronotum and apex of clypeus, elytra dark rufous to greenish black, rarely piceous, pygidium and beneath rufous, antennae unicolorous. Prothorax nearly twice as wide as long, narrowing in front, sides feebly arcuate, hind angles rectangular but obtuse, punctation sparse and very fine on disc, coarser at sides. Elytra very slightly broader than long, each elytron with nine very fine striae, intervals more coarsely and densely punctate than the pronotum, sutural striae distant from the suture but approaching the suture towards the apex, very close to the suture a fine row of punctures, apices feebly sinuate before the sutural angles. Beneath moderately coarsely punctate, pubescent. Claws dentate. Length 3.7–6 mm.

This species is near to the Mexican *morio* which is broader, has more finely punctate elytra, more distinct elytral humeri. It is even closer to *gaumeri*, which has the pronotum broader in front, is more obsoletely punctate, usually paler, and has a piceous pygidium.

This species occurs on Ebony (April–October) in Texas (Harlingen, Brownsville).

CAMPTODES (EUCAMPTODES) GAUMERI Sharp

Camptodes gaumeri Sharp, 1890, Biol. Centr.-Amer. Col., **2** (pt 1), 330, pl. 10, fig. 21.
Type: from Temax in northern Yucatan in the British Museum and four paratypes in the U.S.N.M.

Similar to *texanus* but more obsoletely punctate above and beneath, pronotum in front slightly broader, antennal club slightly darker than the rest of the antenna, pronotum and scutellum usually rufous, sometimes dark rufous or rufo-piceous, elytra rufo-piceous, beneath testaceous or rufous, pygidium ferrugineous to piceous. Claws dentate. Length 4–5 mm.

An example from "Mex." (M.C.Z.) was compared with the type in the B.M. Later four paratypes were found in the U.S.N.M. All these agree with the specimens mentioned below.

This species occurs (April 20–June 25) at Brownsville, Texas (Cal.

Acad. Sci., M.C.Z.: Fall coll., and the writer's coll.), and in Mexico (Temax, Yucatan). One Texas specimen is testaceous beneath instead of rufous.

CAMPTODES (EUCAMPTODES) NIGERRIMUS spec. nov.

Very broadly oval, rather strongly convex, shining, glabrous. Color above jet black, beneath black, legs and antennae piceous. One specimen differs in having the underside and pygidium ferrugineous. Mentum very sparsely punctate all over. Prothorax very nearly twice as wide as long, narrowing in front, sides evenly feebly arcuate, hind angles rectangular but obtuse, punctation sparse and very fine on disc, slightly more dense and, not at all or very slightly, coarser at sides. Elytra slightly broader than long, with about seven very fine striae (excepting the sutural), intervals more coarsely, densely, and irregularly punctate than the pronotum. Sutural striae distant from the suture but gradually approaching the suture towards the apex, close to the suture a row of very fine punctures, apices feebly sinuate before the sutural angles, humeral umbone rather prominent. Pygidium slightly deflexed apically, the deflexed part somewhat concave (not so in one specimen). An impunctate longitudinal line on scutellum. Claws dentate. Length 4.5–5.2 mm., width 3.2–3.6 mm.

This species is closely related to *morio* but differs in being less broad, less convex, clypeal suture usually more depressed, head more finely punctate, mentum more sparsely punctate, pronotal punctures not at all or only very slightly coarser and denser at the sides, elytra more coarsely punctate and striate, the humeral umbone nearer the lateral margin, and pygidium more finely punctate. Both *gaumeri* and *texanus* are more coarsely punctate, particularly on the head and the sides of the pronotum and elytra, pygidium more densely punctate, and they are differently colored; otherwise *gaumeri* and *texanus* are nearer to *nigerrimus* than is *morio*. The humeral umbone is more pronounced and slightly nearer the lateral margin than in either *texanus* or *gaumeri*.

Holotype (♀) and paratypes from Patagonia, Santa Cruz Co., Arizona, July 6, 1936, M. Cazier collector. Holotype and paratype are in the L. Gillogly collection; paratypes are in the A.M.N.H. (Cazier coll.) and the writer's collection. One specimen differs from the others in having a rufous underside and pygidium, the pygidium undeflexed, not concave at apex, and is more obsoletely punctate.

17. Amphicrossus Erichson

Plates 8, figs. 20–26; pl. 13, fig. 6

Amphicrossus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 346.
 Genotype: *Nitidula ciliatus* Oliv.
Lobostoma Fairm., 1892, Rev. d'Ent., **11**, 90.
 Genotype: *Lobostoma picea* Fairm.
Rhacostoma Berg, 1898, Com. Mus. Nat. Buenos Aires, **1**, 18. pro *Lobostoma* Fairm. nec Gundlach, 1840.

Oval, convex, pubescent. Head moderate, clypeus indistinct. Antennae longer than the head, first segment enlarged, second convex, third slightly shorter than the second, third to fifth slender, sixth to eighth short and progressively transverse, club oval, moderately compact. Antennal grooves subocular, slightly convergent. Labrum bilobed. Mandibles bidentate at tip, the inner tooth shorter than the outer, feebly bearded. Lacinia short, rounded at tip, and heavily bearded. Maxillary palpi with first segment small, second subclavate, third short, fourth as long as the second and truncate. Ligula moderate; palpi with first segment small, second subclavate as long as the third, which is truncate at tip. Paraglossae large. Mentum transverse. Prothorax about as broad as the elytra, its hind margin overlapping the base of the elytra. Elytra entire, exposing the tip of the pygidium; epipleurae broad, attaining the apices. Prosternum more or less carinate, the process prolonged and slightly expanded behind the coxae. Mesosternum carinate. First ventral segment as long as the next two combined; the fifth slightly longer than the fourth. Anterior tibiae simple, middle and posterior spinulose externally. Anterior tarsi broadly dilated, middle moderately dilated, posterior very feebly dilated. Claws simple. Male eighth dorsal segment visible only from beneath; in some species the males have a pencil of setae on each elytron at or near the suture at its middle.

Amphicrossus seems to be, as Grouvelle placed it, intermediate between *Camptodes* and *Cychramus*.

This cosmopolitan genus contains about thirty species. *Amphicrossus* is absent from Europe, its center of distribution lying in eastern Asia. Therefore the few (5) rare American forms probably have developed from ancestors which immigrated from Asia. Apparently all the species feed at sap.

Key to Nearctic species

Elytral margins broadly fimbriate, prosternum obtusely carinate . . . . *ciliatus*

Elytral margins narrowly fimbriate, prosternum acutely carinate . . . . *niger*

AMPHICROSSUS CILIATUS (Oliv.)

Nitidula ciliatus Oliv., 1811, Encycl. meth., **5**, 210.
Nitidula unilineatus Say, 1825, Journ. Acad. N. S. Philad., **5**, 182.
Types: of *ciliatus* "sur les ulcéres du *Liquidambar* en Caroline" probably in the Paris Museum; of *unilineatus* from eastern United States is lost.

Broadly oval, convex, sparsely pubescent. Color testaceous to dark rufo-piceous, legs paler. Pronotum paler at sides and with a median basal pale spot. Each elytron with five pale spots. These pale markings may be absent in the dark specimens. Head densely punctate. Prothorax slightly less than twice as wide as long, narrowed in front, apex deeply emarginate, lateral margins feebly arcuate, moderately fimbriate, hind angles broadly rounded, base truncate, surface moderately coarsely and densely punctate. Elytra conjointly as wide as long, margins broadly fimbriate, surface more finely and sparsely punctate than the pronotum. The males have a pencil of setae on each elytron near the sutural margin at middle. Length 3.5–4.5 mm.

For comparisons with *niger* see under the latter species.

This species occurs (April–Sept. in the north, throughout the year in the south) from Ontario to Florida (Key Largo, Lake Mary, Enterprise), Cuba (Cayamas), Panama (Old Panama), west to Texas (Dallas), Missouri, and Iowa. In the spring *ciliatus* is found at sap, but in the autumn occurs on flowers of *Eupatorium* and allied plants.

AMPHICROSSUS NIGER Horn

Amphicrossus niger Horn, 1879, Trans. Amer. Ent. Soc., **7**, 317.
Type: from Arizona, three cotypes in the Philadelphia Acad. Nat. Sci. and one in the M.C.Z. (Leconte coll.).

Oval, convex, sparsely pubescent. Unicolorous, fuscous above, somewhat paler beneath. Head rather sparsely punctate. Prothorax nearly twice as wide as long, narrowed in front, apex deeply emarginate, lateral margins feebly arcuate, narrowly fimbriate, hind angles obtusely rounded, surface moderately finely and sparsely punctate.

Elytra conjointly longer than wide, margins narrowly fimbriate, surface more finely and sparsely punctate than the pronotum; no elytral pencils of setae in the males. Prosternum acutely carinate.

Aside from the key characters, *niger* differs from *ciliatus* in being fuscous, unicolorous, lacking the pencil of setae on each elytron, more parallel, the pronotum more emarginate in front, and more finely punctate.

This species is known from southern Arizona (San Pedro River, Fairbanks, Sept. 6; Tucson, July 19, Aug. 16; Baboquivari Mts.).

18. CYCHRAMUS Kugelann

Plates 9, figs. 1–7; pl. 13, fig. 9

Cychramus Kug., 1794, in Schneid. Mag., **5**, 543.
Genotype: *Sphaeridium luteum* Fabr.
Campta Stephens, 1830, Illust. Brit. Ent., **3**, 30, 44.
Genotype: *Sphaeridium luteum* Fabr.

Oval, convex, pubescent. Head moderate, clypeus moderately distinct. Antennae about as long as the head, first segment strongly widened anteriorly, second convex, shorter than the third, fourth to eighth progressively more transverse, club broadly oval, compact. Antennal grooves short and convergent. Labrum feebly emarginate. Lacinia broad and rounded at tip, with rather short beard; palpi with first segment small, second short, slightly longer than the third, fourth as long as the second and third together. Mandibles broad, bidentate at tip, feebly bearded. Ligula large, paraglossae moderate, palpi thick, first segment small, second clavate, third longer than the second, thickened and truncate at tip. Mentum emarginate in front. Pronotum about as wide as the elytra, hind margin extending over base of elytra. Scutellum rounded posteriorly. Elytra entire, exposing the tip of the abdomen. Epipleurae broad, attaining the apices. Prosternal process acutely elevated behind the coxae. Mesosternum vertical, not carinate. First ventral segment longer than the next two combined, second to fourth of equal length, fifth as long as third and fourth combined. Tibiae simple, tarsi broadly dilated, claws simple. Male eighth dorsal segment small, visible only from beneath.

Cychramus resembles *Amphicrossus* but on dissection turns out to be most nearly related to *Cyllodes*.

This genus contains 16 species found generally except in the Ethiopian region. Two occur in the United States in fungi and at flowers.

CYCHRAMUS ADUSTUS Erichson

Cychramus adustus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 346.
Type: from eastern United States in the Berlin Museum.

Broadly oval, convex, pubescent. Color ferruginous, with lateral margins and posterior halves of elytra piceous, but the elytra may be entirely ferrugineous or entirely dark piceous. Head slightly less densely punctate than the pronotum. Prothorax with width to length as 1.7 to 1, strongly emarginate in front, sides feebly arcuate, finely fimbriate, hind angles obtusely subrectangular, base truncate, surface densely and moderately coarsely punctate. Elytra conjointly as long as broad, slightly narrower posteriorly, margin finely fimbriate, apex obtusely truncate, surface with fine elongate punctures arranged in regular series. Tibiae simple. Length 3–4.5 mm.

This species is near to and probably derived from the European *luteus*.

This species occurs (May–Sept., chiefly in June) from New Hampshire to Georgia, west through Alabama (Metanka, Langdale) to Texas (Dallas), Missouri, and Michigan (Detroit).

CYCHRAMUS ZIMMERMANNI Horn

Cychramus zimmermanni Horn, 1879, Trans. Amer. Ent. Soc., **7**, 319.
Type: from South Carolina, no. 7969, in the M.C.Z. (Leconte coll.).

Oval, strongly convex, sparsely pubescent. Dark ferrugineous, elytra somewhat darker to piceous. Head punctate as in the pronotum. Prothorax with width to length as 1.7 to 1, narrower in front, sides feebly arcuate, finely fimbriate, hind angles obtusely subrectangular, base truncate, surface densely, moderately coarsely, submuricately punctate. Elytra conjointly slightly wider than long, margins finely fimbriate, seriately, finely, submuricately punctate. Anterior tibiae feebly sinuate on the outer side, the apical angle produced into a long, triangular tooth; middle tibiae sinuate externally, the apical angle moderately prolonged; posterior tibiae feebly sinuate, the apical angle more prolonged than the middle but distinctly less than in the anterior tibiae. Length 3.7–4.2 mm.

This species is less oval and more convex than *adustus* and differs in the tibiae and punctation.

In addition to the type there is a specimen from Georgia in the M.C.Z. (F. C. Bowditch coll.).

19. Pallodes Erichson

Pallodes Er., 1843, in Germar, Zeitschr. für Ent., **4**, 348–350.
Genotype: *Pallodes silaceus* Er. = *pallidus* Beauvois.

Medium size, oval, moderately strongly convex, glabrous. Head moderate, clypeus moderately distinct. Antennae longer than the head, first segment enlarged, second convex, third to seventh slender becoming progressively convex, eighth transverse, club large, oval, and compact. Antennal grooves short and convergent. Labrum feebly emarginate. Mandibles strongly bidentate at tip. Lacinia rounded at tip, moderately bearded; palpi with first segment small, second rather short and clavate, third shorter than the second, fourth rather thick, as long as the second and third. Ligula large, paraglossae moderate, labial palpi thick, first segment small, second short and clavate, third oval, and truncate at tip. Mentum rectangular, feebly emarginate in front. Pronotum narrower than the elytra. Elytra entire, exposing the tip of the pygidium; epipleurae narrowing rapidly, barely attaining the apices. Scutellum large, triangular. Prosternal process moderately expanded behind the coxae. Mesosternum carinate (carina may be absent in some individuals). First ventral segment as long as the fifth which is less than twice as long as the fourth, second to fourth of equal length. Outer apical angles of the tibiae are obtusely rounded. Anterior and middle tarsi moderately broadly dilated, posterior tarsi slender and greatly lengthened, being as long as tibiae. Male eighth dorsal segment only slightly exposed, visible only from beneath.

Grouvelle, 1913, has made the Japanese *Neopallodes* a synonym of *Pallodes*, but the former is certainly a valid genus.

Pallodes contains about 80 species which are distributed generally except in continental Eurasia and Australia. The two Nearctic species are evidently immigrants from the very rich Neotropical *Pallodes* fauna.

Pallodes pallidus (Beauvois)

Plates 9, figs. 8–16; pl. 13, fig. 8

Sphaeridium pallidum Beauv., 1805, Ins. rec. en Afr. et en Amer., p. 157, pl. 6, fig. 1.

Pallodes silaceus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 350.

Grouvelle's listing, 1913, of "*unistriatus* Horn (non Palisot)" as a synonym is due to a misunderstanding of Horn, 1885, Ent. Amer., **1**, 90.

Types: of *pallidus* from South Carolina is unknown to the writer; of *silaceus* from eastern United States is in the Berlin Museum.

Oval, rather strongly convex, glabrous, shining, elytra iridescent. Color varying from testaceous to dark rufous with elytra black. Prothorax more than twice as wide as long, apex rather strongly emarginate, sides arcuate, narrowed in front, hind angles subrectangular, base feebly arcuate, at middle a very short, truncate scutellar lobe, surface very finely and sparsely punctate. Elytra conjointly longer than wide, each elytron with nine rows of moderate punctures, the sutural row deeply impressed; intervals with a single series of very fine punctures. Length 3—4 mm.

This species occurs (May-Sept.) from Massachusetts (Marthas Vineyard) to Florida (Lake Mary, Lake Co., Crescent City, Jacksonville) west to Texas, Arkansas (Hope), north to Michigan (Galesburg). It is found in fleshy fungi, such as *Tricholoma terrifera, Lactarius volemus,* and *Collybia platyphylla.*

PALLODES PLATEOSUS Schaeffer

Pallodes plateosus Schaef., 1931, Bull. Brooklyn Ent. Soc., **26**, 174–5.
Type: from Huachuca Mts., Arizona in the U.S.N.M.

Similar to *pallidus.* Head and antennal club rufo-piceous. Pronotum testaceous with a large blackish central spot and on each side of this a small round black spot. Scutellum and elytra dark rufous, the elytra blackish laterally and apically. Beneath dark rufous. Punctation more obsolete, and the anterior and middle tibiae more slender than in *pallidus.* As in *pallidus* the punctation varies in distinctness. Length 3.6—4.3 mm.

Of the species in the British Museum, *sellatus,* described by Sharp from Mexico, is closely related to *plateosus.*

This species occurs in southern Arizona at Palmerlee and in Ramsey Canyon, Huachuca Mts., where it was collected in quantity on August 3.

20. CYLLODES Erichson

Plates 9, figs. 17–25; pl. 13, fig. 10)

Cyllodes Er., 1843, in Germar, Zeitschr. für Ent., **4**, 342.
Genotype: *Strongylus ater* Herbst.
Stronglus Herbst (*pars nec* Muller, 1780), 1792, Natursyst. Ins. Käf., **4**, 179.
Volroxis Kugel., 1794, in Schneid. Mag., **1**, 355 (pars).
Pseudocamptodes Grouvelle, 1896, Ann. Soc. Ent. Fr., **65**, 76.

Medium size, oval, moderately strongly convex, glabrous. Head moderate, clypeus moderately distinct. Antennae longer than the head, first segment enlarged and convex, second convex, third to fifth slender, sixth and seventh short and convex, eighth transverse, club large and elongate oval. Antennal grooves short and convergent. Labrum feebly emarginate. Mandibles broad, simple at tip, with about two small teeth behind the tip, feebly bearded. Lacinia very broad and feebly bearded; first segment of palpi minute, second short and clavate, slightly longer than the third, fourth as long as first three together. Ligula large, paraglossae moderate, labial palpi thick, first segment small, second clavate, third oblong, about as long as first and second. Mentum rectangular, feebly emarginate in front. Pronotum slightly lobed at base, narrower than the elytra. Elytra entire, exposing the tip of the pygidium; epipleurae broad and attaining the apices. Scutellum large, somewhat rounded posteriorly. Prosternal process somewhat expanded behind the coxae and abruptly vertical. Mesosternum carinate, usually concealed by the meeting of the pro- and metasternum, the latter prominent in front. First ventral segment twice as long as the second, longer than the fifth, second to fourth of equal length. Outer apical angle of the tibiae acute but not spiniform. Anterior and middle tarsi rather broadly dilated, posterior tarsi feebly dilated; claws simple. Male eighth dorsal segment only slightly visible from behind.

This genus is closely related to both *Pallodes* and *Oxycnemus*, particularly the latter. *Cyllodes* is cosmopolitan and contains over 60 species.

CYLLODES BIPLAGIATUS Leconte

Cyllodes biplagiatus Lec., 1866, Proc. Acad. Nat. Sci. Philadelphia, p. 377.
Type: from Massachusetts, no. 6983, in the M.C.Z. (Leconte coll.).

Broadly oval, rather strongly convex, glabrous, shining. Color black, a large, nearly round, red spot near the base of each elytron. Head rather finely and densely punctate. Prothorax slightly less than twice as wide as long, narrowed in front, apex strongly emarginate, sides moderately, evenly arcuate, hind angles subrectangular, base with a short, broad, scutellar lobe. Elytra conjointly as wide as long, each elytron with seven rows of rather fine punctures, each interval with an irregular row of very fine punctures. Prosternum coarsely, densely punctate. Tarsi piceous. Length 3.5—4.5 mm.

This species occurs (May-July) from New Hampshire (Three Mile Isl.) to New Jersey (Orange Mt., Monmouth Jct.), west through New York (Buffalo), Michigan (Detroit, Marquette), Wisconsin (Bayfield), Minnesota (Filmore Co.), to Manitoba (Aweme, Winnipeg, Victoria

Beach). Perhaps significantly it is not recorded from Indiana by Blatchley.

Wickham, 1894, Ent. News, 5: 262, pl. 8, describes the biology of *biplagiatus*. The larvae and adults live only in the Oyster fungus, *Pleurotus ostreatus*, and pupation is in the earth.

21. OXYCNEMUS Erichson

Plates 10, 13

Oxycnemus Er., 1843, in Germar, Zeitschr. für Ent., **4**, 351.
  Genotype: *Oxycnemus fulvus* Er.
Psilopyga Leconte, 1853, Proc. Acad. N. S. Philad., **6**, 286.
  Genotype: *Psilopyga histrina* Lec.
Eugoniopus Reitter, 1884, Wien. Ent. Zeit., **3**, 264, 267.
  Genotype: *Eugoniopus lewisi* Reitter.

Medium size, oval, convex, glabrous. Head short, clypeus moderately distinct. Antennae longer than the head, first segment enlarged, second convex and slightly longer than the third, third to seventh slender and becoming progressively convex, eighth strongly convex, club large, oval, and compact. Antennal grooves long and parallel. Labrum strongly bilobed. Mandibles with a simple apex, a small or large tooth more or less near the apex, feebly bearded. Lacinia very short and broad, moderately bearded; maxillary palpi thick, first segment minute, second and third of equal length, fourth rounded at tip, as long as the second and third combined. Ligula broad, paraglossae moderate, first segment of palpi small, second strongly clavate, third egg-shaped. Mentum feebly emarginate in front. Pronotum about as broad as the elytra, hind margin at middle usually with a short but broad, squarely truncate lobe. Scutellum large, triangular. Elytra truncate, exposing most of the pygidium; epipleurae broad and sinuate on the inner margin, attaining the apices. Prosternal process broadly expanded behind the coxae, covering the mesosternum. Mesosternum may or may not be carinate within a single species. Second and third ventral segments combined shorter than the first but longer than the fifth, two to four about equal in length. Tibiae with outer apical angle dentiform; anterior tarsi broadly dilated, middle slightly less broadly dilated, and posterior tarsi longer and distinctly more feebly dilated; claws simple. Male eighth dorsal segment easily visible from behind.

Of the Nearctic genera *Oxycnemus* is nearest to *Cyllodes*. Sharp, 1891, and Reitter (loc. cit.) have separated genera based on variations in the mesosternum. Since this character varies individually, other differences will have to be found before *Psilopyga* can be validated.

Oxycnemus contains 12 species distributed throughout the New World and in eastern Asia. The Nearctic species live in stinkhorn fungi (*Phallus* sp.).

Key to Nearctic Oxycnemus

1. Elytra unicolorous 2
   Elytra bicolorous ....*fasciata*
2. Pronotum and pygidium black or piceous ....*histrina*
   Pronotum and pygidium bright rufous ....*nigripennis*

OXYCNEMUS FASCIATUS (Sharp)

Psilopyga fasciata Sharp, 1891, Biol. Centr.-Amer., Coleop., **2** (**1**), 364.
Type: from Mexico in the British Museum.

Oval, convex, shining. Dark brown, elytra black except for an orange basal one-third to three-fifths. Head densely, moderately coarsely punctate. Prothorax as wide as long, surface densely, finely punctate. Each elytron with nine or more less complete rows of rather fine punctures, intervals sparsely, finely punctate. Length 5.2—5.5 mm.

This species has a narrower and more carinate prosternal process than *histrina* and differs in color and punctation.

A specimen from Prescott, Arizona (U.S.N.M.) was compared with the unique type by the writer.

OXYCNEMUS HISTRINA (Leconte)

Plates 10, figs. 1–8; pl. 13, fig. 12

Psilopyga histrina Lec., 1853, Proc. Acad. N. S. Philadelphia, p. 287.
Type: from Pennsylvania, no. 6981, in the M.C.Z. (Leconte coll.).

Broadly oval, convex, shining. Usually black, sometimes dark brown. Head very coarsely punctate, with fine punctures intermixed. Prothorax slightly wider than long, surface rather finely punctate, intermixed with extremely fine punctures, some coarse punctures near the apex. Each elytron with ten rows of coarse punctures, intervals slightly convex, very finely punctate. Length 4—6.5 mm. (typical form).

Variation A. Length 6.6—7.7 mm. Yellow with black elytra, and a black, rectangular, basal, pronotal spot; much larger than typical *histrina*, which is 4—6.5 mm. long. This form is represented by one in the M.C.Z. (Fall coll. ex Liebeck coll.) without label and two from

Monterey, Mass. (U.S.N.M.) collected in the same *Phallus* with typical *histrina.*

Variation B. Length 5.4—6.5 mm. Sculptured like *histrina,* but colored like typical *nigripennis,* except for a large, semicircular, black, basal, pronotal spot. This form is represented by two from Rockhaven, Kentucky, one from Canton, North Carolina (U.S.N.M.), and one from Yaphank, N. Y. (Fall coll.).

This species occurs (June-Nov., chiefly in August) in the stinkhorn fungus (*Phallus impudicus*) from New Hampshire to North Carolina (Asheville, Rocky Bottom, Table Rock) and Kentucky (Rockhaven), west through Indiana to Wisconsin (Baraboo).

OXYCNEMUS NIGRIPENNIS (Leconte)

Psilopyga nigripennis Lec., 1863, Smithson. Misc. Coll. **6**, 64.
Type: from Pennsylvania, no. 6982, in the M.C.Z. (Leconte coll.).

Similar to *histrina* but differing as follows. Bright rufous, elytra black. Head moderately coarsely punctate, not intermixed with fine punctures. Pronotum moderately punctate, without the very fine punctures or the coarse punctures near the apex. Prosternum more carinate; the prosternal process narrower between the coxae and more rounded posteriorly. Elytral intervals are more coarsely punctate. The outer apical angles of the tibiae are more prolonged. Length 3.3—4.5 mm.

Very rarely this species has been collected in the same stinkhorn fungus with *histrina,* but in these cases no intergrading forms have been found.

This species occurs (March 9, July-Sept.) in the stinkhorn fungus *Phallus impudicus*) from Massachusetts (Tyngsboro) through New York (Yaphank), Maryland (Glen Echo), Virginia (Scott's Run, Fredericksburg), to North Carolina (Table Rock) and Kentucky (Rockhaven), west to "Indiana" (Blatchley).

MELIGETHINAE

Meligethina Thoms., 1859, Skand. Coleop., **1**, 67.

This subfamily contains nine genera of which only one is Nearctic. The Meligethinae have been placed between the Cateretinae and Carpophilinae by Grouvelle (1913) and Leng (1920), between the Carpophilinae and the Nitidulinae by Reitter (1911), and in the Nitidulinae by Horn (1879) and Ganglbauer (1899). Since the Carpophilinae and the Nitidulinae intergrade, the Meligethinae will have to be placed after the Nitidulinae, particularly as *Meligethes* is more derivative than many genera in the latter subfamily.

MELIGETHES Stephens

Plates 10, 13

Meligethes Stephens, 1830, Ill. British Ent., Mandibulata, **3**, 30, 45 (pars).
Genotype: *Nitidula rufipes* Marsh. = *Meligethes atratus* (Oliv.).

Head narrower than pronotum, no line or furrow separating the clypeus from the front. Third antennal segment narrow, about as long as the first; the compact three-segmented club is oval or round. Antennal grooves deep and nearly parallel. Labrum transverse, bilobed, often entirely concealed by the clypeus. Mandibles short and broad, apex simple with one or two blunt teeth on the inner margin. Lacinia slender, its apex bent inwards at right angles; galea absent. Maxillary palpi rather short and thick; first segment minute, second and third short and thick, about of equal length, the fourth more slender and about as long as the second and third combined. Mentum strongly transverse, the anterior margin strongly emarginate. Second segment of the labial palpi about twice as long as the first, the third about as long as the first two combined. Pronotum about as broad as the elytra at their base; hind angles acutely rounded. Scutellum triangular. Elytra more or less covering the pygidium; epipleurae broad, nearly attaining the apices. Prosternal process expanded posteriorly, overlapping the mesosternum. Mesosternal process truncate, about as wide as the prosternal process. First ventral segment at middle about as long as the fifth, or the second and third combined; fourth as long as the third. Last ventral segment with a deeply impressed, semicircular line on each side, usually in great part concealed by the retraction of the segment. Anterior tibiae usually more or less serrate; sometimes finely denticulate; tarsi broadly dilated; claws usually simple, rarely dentate (subg. *Acanthogethes* and *Odontogethes*).

Grouvelle places this genus among exotic genera which are unknown to the writer. *Meligethes* contains about 240 species, distributed generally except in the Neotropical region. Evidently the Nearctic species are derived from Siberia.

In Europe the larvae are known to feed on the pollen of various flowers and pupate in the earth. The adults also feed on pollen, and some species seem to be restricted to a single kind of plant. For a résumé of the biology up to 1899 see Ganglbauer (1899) 3: 494. Additional references for *Meligethes aeneus* are Chittenden, 1925, Bull. Brooklyn Ent. Soc., 20: 149; Burkhardt and Lengerken (1920) Zs. angew. Ent., 6: 270-295; Aksenov (1929) Bull. Siberian Prot. Plants Sta., Tomsk, 6: 559-562.

The Nearctic species of *Meligethes* are extremely plastic and apparently are in the process of differentiating, as they already have in Europe, into a number of forms. Intergradations are so numerous, particularly with *mutatus* and *aeneus*, that crossing probably occurs.

Key to subgenera (Nearctic)

Claws dentate, upper side without metallic lustre . . . . *Acanthogethes*
Claws not dentate, often with metallic lustre . . . . *Meligethes* s. str.

Subg. ACANTHOGETHES Reitter

Acanthogethes Reitt., 1871, Verh. nat. Ver. Brünn, **9**, 49.
Subgenotype: *Meligethes solidus* Kug.

MELIGETHES PINGUIS Horn

Plate 10, fig. 18

Meligethes pinguis Horn, 1879, Trans. Amer. Ent. Soc., **7**, 314–315.
Type: Côte sud, Terre Neuve, no. 7967 in the M.C.Z. (Leconte coll.). Horn states that L. Reiche gave the specimen to Leconte.

Broadly oval, robust, piceous, feebly shining, sparsely pubescent, surface moderately densely punctate, the elytra more densely than the pronotum. Prothorax nearly twice as wide as long, narrower in front, sides arcuate, more broadly arcuate anteriorly, hind angles obtuse, margin narrow not deplanate, disc convex. Elytra convex, as broad as long. Body beneath coarsely punctate, piceous, legs paler. Anterior tibiae coarsely serrate, middle and posterior tibiae finely denticulate. Prosternum slightly broader behind the coxae, rounded at tip. Clypeus rather deeply emarginate, the lateral angles acute. Length 2.5 mm.

This species is based on the unique specimen from the south coast of Newfoundland. Until it is rediscovered, it must remain a doubtful member of our fauna. It may well be introduced, since it falls well within the range of variation of the Palaearctic *fuscus* Oliv. as shown by the series in the writer's collection.

Subg. Meligethes s. str.

Key to Nearctic species

1. Anterior tibiae more or less finely denticulate..................2
   Anterior tibiae strongly serrate........................*saevus*
2. Pronotal margins distinctly explanate........................3
   Pronotum very narrowly margined, the margin not explanate......
   ....*seminulum*
3. Explanate margin of prothorax extending from base to apex..*aeneus*
   Explanate margin of prothorax not attaining the base....*mutatus*

Meligethes saevus Leconte

Plate 10, fig. 19

Meligethes saevus Lec., 1859. Smithson. Contrib. Knowl., **11**, 6.
Type: from the Platte River, Nebraska, no. 6974 in the M.C.Z. (Leconte coll.).

Oval, black, shining, very sparsely pubescent. Clypeus feebly emarginate. Head and pronotum densely punctate, not alutaceous. Antennae dark piceous. Prothorax with width to length as 1.7 to 1, narrowed in front, sides moderately arcuate, margin narrow, hind angles obtuse, disc convex. Elytra conjointly very nearly as wide as long, surface a little more sparsely and coarsely punctate than the pronotum. Scutellum transversely alutaceous. Beneath black, coarsely and rather sparsely punctate. The curved lines each occupy about one-third the total width of the last ventral segment. Anterior tibiae strongly serrate, middle tibiae finely spinulose, posterior tibiae dilated and finely spinulose. Length 2—2.7 mm.

The emargination of the middle tibiae, mentioned by Horn, is merely an imperfection found only in the type, because the opposite tibia of the same specimen is normal.

This species occurs (April-August) from Illinois and Tennessee (Madison) west to Missouri, Kansas (Topeka), Nebraska (Platte River), Minnesota, North Dakota (Devil's Lake), and Montana; also New Mexico (Beulah) and Colorado.

Meligethes seminulum Leconte

Plate 10, fig. 22

Meligethes seminulum Lec., 1857, Rept. of Expl. and Surv. Miss. to Pacific, **12**, 37.
Type: from Oregon, no. 6978, in the M.C.Z. (Leconte coll.).

Oval, slightly oblong, shining black, sparsely pubescent. Head densely punctate; clypeus nearly squarely truncate. Prothorax twice as wide as long, narrower in front, sides more arcuate anteriorly than posteriorly, margin very narrow, not deplanate, hind angles obtusely rectangular, surface rather densely punctate. Scutellum alutaceous. Elytra conjointly one-fourth longer than wide, slightly narrowed to apex, surface more sparsely and feebly punctate than the pronotum. Beneath rather densely punctate. Anterior tibiae variably denticulate (see figures), middle and posterior tibiae finely spinulose. Length 1.9 mm.

This species is variable, but extremes of variation are found at the same place. Therefore, until ecological or more exact geographical differences can be ascertained, all the specimens must be included under one name. As the species now stands, the type is "atypical."

The range of this species seems to be discontinuous. It occurs (April–July) in Massachusetts (Wayland, Sherborn), Pennsylvania (Lester, Norwood, Chestnut Hill, Reading, Easton, Mt. Neversink), north shore of Lake Superior, Manitoba (Mile 214, Hudson Bay R.R.), Alberta (Edmonton, on *Mertensia paniculata*), Oregon (Hood River), and Yukon (Dawson).

MELIGETHES AENEUS (Fabricius)

Plate 10, figs. 20, 21

Nitidula aeneus Fabr., 1775, Ent. Syst., p. 78.
Meligethes brassicae Reitt. (non Scopoli), 1875, Europ. Nitid., p. 16.
Meligethes moerens Lec., 1857, Pacific R.R. Reports, App. 1, p. 37.
Meligethes rufimanus Lec., 1857, Pacific R.R. Reports, App. 1, p. 37.
Meligethes californicus Reitt., 1871, Rev. Europ. *Meligethes*, Brunn, p. 33. 1873, Verh. nat. Ver. Brunn., **12**, 62.
Types: of *aeneus* from England (Banks collector) presumably in the British Museum (J. Banks coll.); of *brassicae* from Europe and *californicus* from California both presumably in the Hungarian Nat. Mus. in Budapest (Reitter coll.); of *moerens*, no. 6977 from Oregon, and *rufimanus*, no 6975 from San Jose, Calif. on flowers of *Ranunculus*, both in the M.C.Z. (Leconte Coll.).
For complete synonymy see Grouvelle, 1913.

Oval, slightly oblong, black, brownish, or greenish, with an aeneous tinge. Clypeus nearly truncate. Prothorax with width to length as 1.8 to 1, narrower in front, hind angles obtusely rectangular, sides from base to apex narrowly explanate, surface rather densely punctate.

Elytra conjointly one-fourth longer than wide, slightly narrowed to apex, apices separately rounded, surface more shining, more sparsely and finely punctate than the pronotum. Body beneath black, antennae and legs piceous or black. Anterior tibiae more or less finely denticulate (see figures), middle and posterior tibiae dilated, finely spinulose. Length 1.9–2.5 mm.

This extremely variable species grades into *mutatus;* in fact the variation of the Palaearctic specimens of *aeneus* in the writer's collection is great enough to include *mutatus.*

This species occurs all over the Palaearctic region except southeastern Asia, and in North America (March 4, May–July), particularly on the flowers of *Ranunculus* and *Salix* from British Columbia (Cawston) and Montana (Bozeman) to southern California (San Bernadino Mts.), Arizona (Gila River), and New Mexico (Santa Fe); also specimens that are more or less typical have been seen from Tennessee, Indiana, Pennsylvania, and Maine.

MELIGETHES MUTATUS Harold

Plates 10, figs. 9–17, 23; pl. 13, fig. 3

Meligethes ruficornis Lec., 1859, Smiths. Contr. Knowl., **11**, 6 (non *ruficornis* Heer).

Meligethes mutatus Harold, 1868, Cat. Coleopt., **3**, 827.

Type: from the Platte River, Nebraska, no. 6976 in the M.C.Z. (Leconte coll.).

This species is so closely related to *aeneus* that only the slight differences are detailed. Both species are so variable that these differences are not to be strictly interpreted. In *mutatus* the form is slightly more robust, the pronotal sides less arcuate, the surface subopaque, and the interspaces between the punctures distinctly alutaceous. The margins of the prothorax deplanate, usually not attaining the hind angles. At about the posterior fourth of the prothoracic margins, the latter become broader, forming a vague depression (varying in distinctness) behind which the margin is not distinctly explanate. The elytral apices tend to be more truncate, the posterior sutural angles less rounded, and the punctuation of the upper surface of the pronotum closer and finer than specimens of *aeneus* from Tennessee, Pennsylvania, and Horn's specimen from "Cal." which he labelled *rufimanus* (= *aeneus*). Length 2–2.5 mm.

This species occurs (May–July, March) from New York to California, particularly in the cordilleran region from Montana to Arizona and New Mexico.

CRYPTARCHINAE

Ipinae Er., 1843, in Germar, Zeitschr. für Ent., **4**, 355.

This subfamily, apparently the most derivative, contains eight genera of which three occur in the Nearctic region. Its distinguishing character is that the labrum is connate with the clypeus, the suture more or less distinct.

Key to Nearctic genera

1. Anterior coxal cavities open behind 2
   Anterior coxal cavities closed behind; thorax not margined at base, body glabrous . . . . *Pityophagus*
2. Thorax margined at base, slightly overlapping the base of the elytra; body usually pubescent . . . . *Cryptarcha*
   Thorax not margined at base; body glabrous . . . . . . *Glischrochilus*

PITYOPHAGUS Shuckard

Plates 11, 13

Pityophagus Shuck., 1839, Elem. Brit. Ent., pp. 171–2.
Genotype: *Dermestes ferrugineus* Linn.

Elongate, subcylindrical, glabrous. Head large, eyes small, clypeus not at all evident. Antennae as long or slightly shorter than the head, first segment enlarged, second slightly more convex than the third, fourth to eighth moniliform, club oval and compact. Antennal grooves long, deep, and strongly convergent. Labrum small, not emarginate. Mandibles variable, simple or very strongly and bluntly bifid at tip, well bearded. Lacinia long, rounded at tip, feebly bearded; palpi long, third segment shorter than the second, fourth about as long as the second and third combined. Ligula very broad, paraglossae short, palpi moderately thick, second segment about as long as the third. Mentum strongly transverse, feebly emarginate. Pronotum about as broad as the elytra, not margined behind. Elytra usually exposing the entire pygidium; epipleurae narrow, nearly vertical, and attaining the apices. Prosternal process slightly expanded between the coxae, elevated, not covering the mesosternum. Mesosternum not carinate. First ventral segment as long as the next three combined, segments two to four about of equal length, fifth as long as the third and fourth. Tibiae greatly constricted basally, more or less obsoletely spinous externally; anterior tarsi broadly dilated, middle somewhat less broadly and the posterior more or less feebly dilated. Claws simple. Male eighth dorsal segment visible from beneath.

Because of being modified for tunnels, this genus appears to be nearest to *Glischrochilus* but is actually much more closely related to *Cryptarcha.*

Pityophagus is Holarctic and contains nine species. Evidently the genus arrived from Siberia, because it extends into Mexico but is very rare in eastern North America.

Key to Nearctic PITYOPHAGUS

1. Head with a transverse occipital impression, no fovea on vertex. . 2
   Head with a deep fovea on vertex, and obsolete, transverse, occipital impression . . . . *verticalis*
2. Length 6–7 mm., western states to Ohio . . . . *rufipennis*
   Length 5 mm., Penn. and D. C. . . . . *cephalotes*

PITYOPHAGUS VERTICALIS Horn

Pityophagus verticalis Horn, 1879, Trans. Amer. Ent. Soc., **7**, 325.

Type: holotype no. 3213 from Colorado (Morrison collector) in the Philadelphia Acad. Nat. Sci.

Elongate, moderately convex, shining, dark rufo-piceous. Head densely, coarsely punctate, labrum with two distinct foveae, the vertex with a deep, longitudinal fovea, behind which is a more or less obsolete transverse impression. Prothorax with width to length as 1.1 to 1, sides nearly straight, narrowed posteriorly, surface with moderately dense and coarse, oval punctures. Elytra punctate as in the pronotum, punctures coarse at base, sutural striae evanescent anteriorly. Clypeus deflexed in front, bearing two large foveae in the middle. Margin of pygidium strongly elevated. Tibiae obsoletely spinous. Length 6–6.5 mm.

This species is more depressed than *rufipennis* and agrees with *insignis* from Chihuahua, but Sharp mentions only the transverse impression on the head. It agrees with *insignis* in the remarkable labrum.

This species occurs (May–July) in Colorado (type) and Arizona (Williams, Flagstaff in the U.S.N.M.) and New Mexico in the M.C.Z. (Eddy coll.).

PITYOPHAGUS RUFIPENNIS Horn

Plates 11, figs. 1–8; pl. 13, fig. 11

Pityophagus rufipennis Horn, 1872, Trans. Amer. Ent. Soc., **4**, 146.
Type: one lectotype no. 3214 from Oregon in the Philadelphia Acad. Nat. Sci. and one cotype no. 7971 from Vancouver, British Columbia in the M.C.Z. (Leconte coll.).

Elongate, convex, shining. Color usually dark castaneous with rufotestaceous elytra; head and pronotum sometimes piceous or black and very rarely the elytra may be dark piceous also. Head moderately densely and coarsely punctate; vertex not impressed, but a transverse impression on the occiput. Prothorax with width to length as 1 to 1, sides nearly straight, slightly narrowed posteriorly, surface with rather sparse, moderate punctures. Elytra slightly more finely and densely punctate than the pronotum, finely alutaceous. Margin of pygidium strongly elevated. Tibiae obsoletely spinous. Length 4.4–7 mm.

This species occurs (April–August, chiefly in May) from British Columbia (Pender Harbor, Vancouver, Beaverfoot Range) south through Washington (Port Angeles, Pullman, Skokomish River), Idaho (Moscow), Oregon (Hood River, Scarpoose, Mt. Hood) to California (Lake Tahoe, Fresno, Carmel, Marin Co., McCloud, Mt. Wilson, San Bernadino Mts.) and Nevada (probably the extreme western part); also one from "Ohio" collected by Blaisdell (Cal. Acad. Sci.: Blaisdell coll.).

PITYOPHAGUS CEPHALOTES Leconte

Pityophagus cephalotes Lec., 1866, Proc. Acad. N. S. Philad., p. 377.
Type: from Pennsylvania, no. 6986, in the M.C.Z. (Leconte coll.).

Elongate, convex, shining. Color uniformly rufo-piceous, elytra slightly darker. Head with a transverse impression on the occiput. Prothorax as wide as long. Punctation as in *rufipennis*. Margin of pygidium strongly elevated. Middle tibiae spinous. Length 5 mm.

This species is known from the type and a specimen collected on a fence south of the Treasury Building, Washington, D. C., and probably in the Carnegie Museum (Ulke coll.).

CRYPTARCHA Shuckard

Plates 10, 13

Cryptarcha Shuck., 1839, Element. Brit. Ent., p. 165.
Genotype: *Nitidula strigata* F.

Size small to large, almost always pubescent, moderately convex. Head large and broad, clypeus not at all evident. Antennae as long as the head, first segment enlarged, second convex, shorter than the third, third to fifth slender, sixth to eighth short and convex, club variable, more or less oval, loose or compact. Antennal grooves short and convergent. Mandibles simple or feebly bifid at tip, feebly bearded, in the males of some species the right mandible is much longer than the left. Lacinia long, rounded at tip, feebly bearded. Maxillary palpi long, first segment as long as the third, fourth as long as the second and third combined. Ligula very broad, paraglossae small, palpi thick, second segment as long as the third. Mentum strongly transverse, very feebly emarginate in front. Prothorax as broad or broader than the elytra, posterior margin overlapping the elytra. Scutellum not large. Elytra entire, exposing none or only the tip of the pygidium. Prosternal process prolonged behind the coxae and laminiform. Anterior coxae open behind. First ventral segment longer than the second and third combined, about as long as the fifth, second to fourth of equal length. Tibiae slender, spinulose externally; anterior tarsi broadly dilated, middle and posterior tarsi moderately dilated; claws simple. Male eighth dorsal segment not or only slightly visible from beneath.

Cryptarcha is most nearly related to *Liarcha* Sharp from Middle America. Of the Nearctic genera, it is nearer to *Pityophagus* than to *Glischrochilus*.

This cosmopolitan genus contains about 120 species. Of the six Nearctic species, all but one (*strigatula*) show Neotropical affinities. These beetles occur at sap of deciduous trees and fly readily to light.

Key to Nearctic subgenera

1. Prosternum broad between the coxae and extending beyond the middle of the mesosternum; anterior margin of the metasternum transverse or broadly rounded anteriorly; species usually longer than 4 mm. . . . . *Cryptarcha* s.str.
2. Prosternum more or less narrow between the coxae and not extending beyond the middle of the mesosternum; anterior margin of the metasternum acutely rounded anteriorly; species usually shorter than 4 mm. . . . . *Lepiarcha*

Subg. CRYPTARCHA s. str.

Key to Nearctic species (and STRIGATA)

1. Unicolorous above 2
   Elytra with irregular pale fasciae 3
2. Apex of prosternal process rounded . . . . *ampla*
   Apex of prosternal process truncate . . . . *glabra*
3. Apex of prosternal process emarginate . . . . *strigata*
   Apex of prosternal process rounded . . . . *strigatula*

CRYPTARCHA AMPLA Erichson

Plates 10, figs. 24–31; pl. 13, fig. 14

Cryptarcha ampla Er., 1843, in Germar, Zeitschr. für Ent., **4**, 356.
Type: from Pennsylvania in the Berlin Museum.

Oblong oval, more obtuse in front, moderately convex, feebly shining, sparsely pubescent, sometimes almost glabrous above. Color varies from testaceous to nigropiceous. Prothorax feebly emarginate in front, sides slightly narrowed anteriorly, feebly arcuate, margins narrowly reflexed, hind angles obtuse, surface moderately finely and densely punctate. Elytra gradually narrowing posteriorly, lateral margins feebly reflexed, apices separately rounded, more obliquely so in the male, surface substriately punctate, without setae. Length 4.5–7.8 mm.

This species occurs at sap of maple and willow (April-Sept.) from Ontario and Quebec to Florida, west through Alabama (Mobile) to Texas, Missouri (St. Louis), Kansas, Iowa, Colorado, California and Oregon (Portland), but not in the southwest.

CRYPTARCHA GLABRA Schaeffer

Cryptarcha glabra Schaef., 1909, Bull. Brooklyn Mus., **1**, 375.
Type: from the Huachuca Mts., Arizona, August 9 in the U.S.N.M.

Oblong oval, moderately convex, glabrous, shining. Dark piceous to black above, paler beneath. Head moderately finely and sparsely punctate; mandibles unequal in the male. Prothorax with apex moderately emarginate, sides feebly arcuate anteriorly, nearly parallel posteriorly, hind angles rectangular, surface finely and sparsely punctate. Elytra gradually narrowing posteriorly, apices separately rounded, surface with six rows of fine punctures, intermixed with fine punctures. Beneath very feebly pubescent. Length 5–5.5 mm.

This species differs from *ampla* in being glabrous, darker, more parallel, and more finely punctate.

Known only from southern Arizona, *glabra* is represented by five specimens beside the type: Carr Canyon, Huachuca Mts., July 7–30 (Calif. Acad. Sci.), Kits Peak, Rincon, Baboquivari Mts. (A.M.N.H.), Baboquivari Mts., April, August (M.C.Z., Fall coll.), and San Bernadino Ranch, 3750 ft., Cochise Co., August in the writer's collection.

CRYPTARCHA STRIGATULA Parsons

Cryptarcha strigata auctt. (*partim*).

Cryptarcha concinna Melsh., Reitter, 1873, *nec* Melsh., 1853, Syst. Eintheil. Nitid., p. 150.

Cryptarcha strigatula Pars., 1938, Psyche, **45**, 98–99, fig. 4.

Type: from the Bronx, New York City, August 15, 1896 in the writer's collection. Paratypes in the M.C.Z., A.M.N.H., C. A. Frost coll., and C. Parsons coll.

As the name implies, this species is a diminutive relative of *strigata*. It is very similar to *strigata*, egg-shaped, piceous, alutaceous, sparsely pubescent, with pale setae irregularly arranged on the pronotum but in seven indistinct rows on each elytron. The two transverse sinuous fasciae are much as in *strigata*, except that the anterior may reach the sutural margin of the elytra. The prosternal process is broadened and emarginate at the tip in *strigata*, but only slightly broadened and rounded at the tip in *strigatula*. The length is 2.7–3.5 mm., whereas the length of *strigata* is 3.2–4.2 mm. The minimum length of *strigata* is from the literature and must be very unusual, since the smallest specimen in the collections of the B.M., M.C.Z., U.S.N.M., and the writer measures 4.0 mm.

This species occurs (April–Sept.) from Massachusetts (Stoughton) to Florida (Orange Co.), west to Texas (Columbus) and Michigan.

Subg. LEPIARCHA Sharp

Lepiarcha Sharp, 1891, Biol. Centr.-Amer., Col., **2** (pt. 1), 385.
Subgenotype: *Cryptarcha omositoides* Reitter.

Cryptarchula Ganglbauer, 1899, Käf. Mitteleur., **3**, 551.
Subgenotype: *Cryptarcha* (*Cryptarchula*) *imperialis* Fabr.

This subgenus contains at least the European *imperialis* and its allies, the Central American *omositoides* Reitter, and the following species.

Prosternal process greatly expanded at tip .... *gila*
Prosternal process only slightly expanded at tip .... *concinna*

CRYPTARCHA GILA Parsons

Cryptarcha gila Pars., 1938, Psyche, **45**, 99–100, fig. 6.
Type: from Wheatfields near Globe, Arizona, May 4, 1934 in the writer's collection.

Elongate, piceous above, testaceous beneath. The anterior half of head, lateral fourths of the pronotum, epipleurae, and elytral fasciae testaceous. The upper surface closely punctate, finely pubescent, with numerous pale setae. The setae are arranged in eight rows on each elytron. The under surface obsoletely punctate and more sparsely pubescent. The prosternal process broadly expanded behind the coxae. The anterior and middle coxae pale testaceous. The mandibles are of equal length and notched at tip. Length 2.5–3.3 mm.

This species is more elongate and a little longer than *concinna.* The apices of the elytra are more pointed than in *omositoides* and *concinna,* agreeing in this respect with *imperialis.* The margins of the thorax and the epipleurae are more narrowly reflexed than in *concinna* and more broadly reflexed than in *imperialis.*

This species occurs (April–June) in California (Bakersfield, paratypes in Cal. Acad. Sci.) and Arizona (Ft. Yuma, Catalina Springs, Globe, Chiricahua Mts.).

CRYPTARCHA CONCINNA Melsheimer

Cryptarcha concinna Melsh., 1853, Cat. of the desc. Coleop. of U. S., p. 41.
Cryptarcha liturata Lec., 1863, List Coleop. of N. Amer., **1**, 30.
Cryptarcha picta Melsh., 1866, Proc. Acad. N. S. Philad., **2**, 107.
Cryptarcha bella Reitter, 1873, Syst. Eintheil, Nitid., p. 150.
Types: of *concinna* from Pennsylvania in the M.C.Z. (Melsheimer coll); of *liturata* Lec. from Nebraska in the M.C.Z. (Leconte coll.); of *picta* Melsh. not found in the M.C.Z.; of *bella* Reit. from North America presumably in the National Museum, Budapest (Reitter coll.).

Similar to *strigatula,* but more regularly oval, less convex, more explanate pronotal margins, and the prosternal process narrower and more acutely rounded at apex. Mandibles unequal in the male. Also this species is usually more pubescent than *strigatula,* consequently more shining. The markings may be absent; when present the sinuous fasciae of the elytra are usually entire. Length 2–3 mm.

This is an extremely variable species.

Its range is (April–Sept.) Massachusetts to Florida west to southern California and Oregon.

Glischrochilus Reitter

Plates 11, 13

Glischrochilus Reitter, 1873, Verh. nat. Ver. Brünn, **12**, 162.
Genotype: *Silpha quadripustulatus* L. = *Silpha quadripunctatus* L.
Ips Fabricius, 1776, Gen. Insect. Chilonii, pp. 23,213. (nec DeGeer, 1775).
Genotype: same as for *Glischrochilus*.
Librodor Reitter, 1884, Wien Ent. Zeit., **3**, 269, 270.
Genotype: *Cryptarcha ipsoides* Reitter.

Large, oblong, glabrous, shining. Head large, broad; clypeus indistinct. Antennae about as long as the head, first segment long and moderately convex, second more convex and shorter than the third, three to eight becoming progressively shorter and more convex, club broad oval, moderately compact. Antennal grooves rather long, convergent. Labrum transverse, connate with the clypeus. Mandibles more or less strongly and bluntly bifid at tip, feebly bearded. Lacinia attenuate at tip, feebly bearded; second segment of palpi slightly longer than the third, fourth as long as the first. Ligula broad, emarginate at apex, paraglossae long, horn-shaped; palpi long and slender, second and third segments about of equal length. Mentum strongly transverse, deeply emarginate in front. Prothorax as broad or broader than the elytra, not margined at base. Scutellum small. Elytra entire, exposing none or only the tip of the pygidium; epipleurae narrow. Prosternum prolonged behind the coxae, laminiform, never attaining the metasternum. Anterior coxae open behind. First ventral segment nearly as long as the next three together, fourth longer than the third. Male eighth dorsal segment often invisible, visible only from beneath.

This is the most derivative genus of the Nitidulidae and most nearly related to *Pityophagus*.

The species breed in fleshy fungi.

Glischrochilus contains about 35 species, generally distributed except in Africa. The species are found at sap, rotten fruit, and in tunnels of Scolytidae.

Key to Nearctic species

1. Body wider, its width never less than two-fifths its length; moderately convex; often not quite parallel. Intercoxal process of prosternum broadly rounded at apex. Legs rather stout; at least the anterior tarsi strongly dilated. Subgenus *Librodor* Reitter 2

Body narrower, its width never greater than two-fifths its length; convex or depressed; parallel. Intercoxal process of prosternum truncate at apex. Legs slender, tarsi never strongly dilated. Subgenus *Glischrochilus* s. str. 8

2. Metasternum and abdomen red 3

Metasternum and abdomen black 4

3. Elytron red, the apical third, humeral angle, and a submedian spot black . . . . *sanguinolentus sanguinolentus*

Elytron black, with a transverse basal and a submedian spot red . . . . *sanguinolentus rubromaculatus*

4. Length 7.5 mm. or more; elytron with two moderately large, subcircular, red spots . . . . *obtusus*

Length less than 7.5 mm.; elytral spots variable but never at one time large, red, and circular 5

5. Elytral spots large, the basal distinctly trilobed, the basal and post-median equidistant from the suture . . . . *fasciatus*

Elytral spots variable, the basal oblique and quadrate when large, the postmedian more sutured than the basal 6

6. Elytral spots very small, pale yellow, the basal slightly longer than the scutellum and parallel to suture, the post-humeral spot when present distant from the basal by twice the length of the latter, the post-median spot occupying one-fourth of the elytral width . . . . *siepmanni*

Elytral spots usually much larger, reddish when small, the basal only very rarely parallel to the suture, the post-humeral when present less distant from the basal 7

7. Elytral spots smaller, the basal usually sublunate, sometimes subquadrate, the post-median occupying not more than three-fifths of the elytral width . . . . . . *quadrisignatus quadrisignatus*

Elytral spots larger, the basal subquadrate, the post-median occupying seven-tenths of the elytral width . . . . *quadrisignatus canadensis*

8. Elytron with the spots pale yellow, small, and linear, from three to five in number, sometimes united to form narrow lines or very rarely reduced to a very small, obsolete basal and post-median spot . . . . *vittatus*

Elytron with reddish markings which are never linear, rarely immaculate 9

9. Body almost three times as long as wide, rather strongly convex; lateral margins of pronotum straight, converging slightly towards the base . . . . *lecontei*

Body shorter, less convex, lateral margins of pronotum moderately and evenly arcuate or converging strongly in basal two-fifths . 10

10. Post-median spot of elytron strongly emarginate on its posterior margin. . . . . *confluentus*

Post-median spot of elytron variable, rarely lacking, but never with the posterior margin emarginate. . . . . *moratus*

The species are described in a slightly different order than above, an arrangement that shows their relationships more accurately.

GLISCHROCHILUS OBTUSUS (Say)

Ips obtusa Say, 1835, Boston Journ. Nat. Hist., **1**, 168.

Type: from eastern United States is lost, but there is an autotype collected under rotten chips on Oct. 10, 1827 at Milton, Mass. which is here designated the neotype. It is in the T. W. Harris collection now on deposit in the M.C.Z.

Large, robust, oblong; punctation moderately dense and distinct, elytra more finely and obsoletely punctate than the pronotum. Color dark rufo-piceous to black, usually black; each elytron with a basal and a post-median red spot; each spot subcircular, occupying about half the width of the elytron; the basal spot equidistant from the sutural and lateral margins; the post-median spot a trifle smaller and situated slightly closer to the sutural than to the lateral margin. In the female the pygidium is very broadly rounded at apex, the apical portion of disc broadly depressed and slightly concave. In the male the distal halves of the middle and posterior tibiae are suddenly widened and the pygidium truncate at apex, its disc not concave. In the female the pygidium is more coarsely punctate and the elytral apices slightly more oblique than in the male. Length 7.5–12.5 mm.

This species occurs (May–August) from New York (Hillburn, Long Island) to South Carolina (Clemson), west through Kentucky (Bee Spring) to Louisiana (Opelousas), Arkansas (South West), and north to Michigan (Detroit).

GLISCHROCHILUS SANGUINOLENTUS SANGUINOLENTUS (Oliv.)

Nitidula sanguinolenta Oliv., 1790, Entomologie, **2**, No. 12, p. 8; pl. 2, fig. 14.

Type: from Georgia and Carolina presumably in the Paris Museum.

Oblong, slightly oval; pronotum finely and sparsely punctate; elytra more coarsely and densely punctate than the pronotum. Color black except as follows: metasternum and abdomen pale red; elytra pale red, each with the humeral angle, a submedian black spot, and apical third, black; the submedian spot circular, situated slightly in front of the middle, equidistant from the lateral and sutural margins and occupying from three-eighths to five-ninths of the width of the elytron, much larger than the humeral spot; elytral epipleura colored like adjacent portions of the disc. In the female the elytra have the apical margins strongly oblique and slightly sinuate before the strongly produced apical angles, the pygidium has a broadly and deeply impressed longitudinal line in about the median half. In the male the elytra have the apical margins broadly rounded and the apices feebly produced, the pygidium with or without a fine median line and its apex more obtuse than in the female. Legs not modified sexually. Length 4.5–6.2 mm.

This species occurs (April–Nov. 5, chiefly in April) from Ontario (St. Eugene, Sudbury, Ottawa) and Quebec (Montreal, Hull) to Florida, west to "Tex." (A.N.S.P.), Iowa (Iowa City), Wisconsin, Alberta (Edmonton), and British Columbia (Trinity Valley).

GLISCHROCHILUS SANGUINOLENTUS RUBROMACULATUS (Reitter)

Ips rubromaculatus Reitter, 1873, Verh. nat. Ver. Brünn, **12**, 161.
Type: from Florida presumably in the Stettin Museum (Dohrn coll.).

Similar to typical *sanguinolentus* but differing as follows. Elytra black, each with a basal and post-median red spot; the basal spot transverse, extending from the humeral umbone to a point near the suture (often attaining the suture), attaining the base only near the umbone, the elytral suture reddish near the spot; the post-median spot situated slightly behind the middle, strongly tranverse, feebly arcuate, the posterior margin convex, separated from the sutural and lateral margins of the elytron by distances equal to half the width of the scutellum; subequal in length to the basal spot.

Although intergradations rarely occur, this variation is usually constant. It is hardly worth a name, however.

This subspecies occurs (April–August) from Quebec (Charlesbourg, Knowlton), New Brunswick (Bathurst), and Nova Scotia (Kentville) to Florida, but no further west than New York (Buffalo), Pennsylvania (Warren Co.), and West Virginia.

GLISCHROCHILUS FASCIATUS (Oliv.)

Nitidula fasciata Oliv., 1790, Entomologie, **2**, no. 12, p. 7; pl. 2, fig. 12.
Ips **4**-*maculosa* Melsh., 1844, Proc. Acad. Nat. Sci. Philadelphia, **2**, 107.
Ips geminatus Melsh., 1844, Proc. Acad. Nat. Sci. Philadelphia, **2**, 108.
Types: of *fasciatus* from Georgia and Carolina presumably in the ParisMuseum; of **4**-*maculosa* and *geminatus* from Pennsylvania in the M.C.Z. (Melsheimer coll.).

Oblong, slightly oval; moderately finely and sparsely punctate. Color black except as follows. Elytra black, each with a large basal and a post-median orange or reddish-yellow spot; the basal spot with its greatest length equal to its greatest width, separated from the suture by a distance not greater than half the width of the scutellum, a little closer to the lateral margin of the elytron, the spot strongly emarginate on its posterior margin and at the humeral umbone and therefore trilobed, sometimes emarginate on its sutural margin; the post-median spot strongly transverse, about half as long as the basal spot and occupying at least two-thirds of the elytral width, equidistant from the sutural and lateral margins of the elytron. Legs and pygidium not sexually modified. In the female the elytra have the apical margins strongly oblique and the apices strongly produced. In the male the elytra have the apical margins slightly oblique and the apices slightly produced. Length 4–7 mm.

This species occurs (April–October, chiefly in April and May) from Ontario (Hastings Co., Vineland Station, Niagara) and Quebec (Hull, Kazubazua) to Florida (Quincy) west to Missouri, Kansas (Topeka), Iowa (Ames, Mt. Pleasant), Athabasca, Oregon, and British Columbia (Vancouver); also New Mexico.

GLISCHROCHILUS SIEPMANNI Brown

Glischrochilus siepmanni Brown, 1932, Can. Ent., **64**, 259–260.
Type: from Fairy Lake, Hull, Quebec, no. 3376, in the Canadian National Collection, Ottawa and a paratype from Manitoba in the U. S. N. M.

Very closely related to *quadrisignatus;* oblong; shining; convex; pronotum slightly more finely and much more sparsely punctate than the elytra. Color brown or black, usually black; each elytron with a small, pale, yellow basal and post-median spot; the basal spot elongate, oval, and parallel to the suture, slightly longer than the scutellum, twice as long as wide, attaining the elytral base and situated midway between the lateral and sutural margins of the elytron; the post-median spot situated at apical third midway between the sutural and lateral margins of the elytron, occupying one-fourth the elytral width, slightly oblique, broadly oval, a little larger than the basal spot. In some specimens there is an oval spot directly behind the humeral umbone. It is never more than half as large as the basal spot and is separated from the basal spot by a distance equal to twice the length of the latter. Elytral apices sexually unmodified. Length 4–6.2 mm.

This species tends to be slightly more finely punctate and more slender than *quadrisignatus*, but can be easily distinguished by the characteristic elytral spots and the flagellum (figured by Brown, Can. Ent., 64:260).

This species occurs (April–Sept., chiefly in the spring) from Ontario (Beaver Mine, Ottawa, Arnprior) and Quebec (Charlebourg, Montreal Ft. Coulonge) to New York (Staten Island), west through Michigan (Detroit) to Kansas (Riley Co.), Iowa (Iowa City), and west in Canada through Manitoba (Aweme), Alberta (Edmonton) to British Columbia (Midday Valley, Merritt, Vernon) and Oregon.

GLISCHROCHILUS QUADRISIGNATUS QUADRISIGNATUS (Say)

Plates 11, figs. 9–16; pl. 13, fig. 13

Ips **4**-*signatus* Say, 1835, Boston Journ. Nat. Hist., **1**, 169.

Ips similis Melsh., 1844, Proc. Acad. Nat. Sci. Philadelphia, **2**, 108.

Ips bipustulatus Melsh., 1844, Proc. Acad. Nat. Sci. Philadelphia, **2**, 108. (*nec* Fab., 1787, Mant. Insect. Hafniae, 1:45).

Ips bipunctatus Melsh., 1844, Proc. Acad. Nat. Sci. Philad., **2**, 108. (*nec* Fab., 1787, Mant. Insect. Hafniae, 1:45).

Ips quadrisignatus sexpustulatus Reit., 1873, Verh. nat. Ver. Brünn, **12**, 161 (*nec* Fab., 1792, Ent. Syst. Hafniae, 1:512).

Types: of **4**-*signatus* from eastern United States is lost; of *similis, bisputulatus,* and *bipunctatus* all from Pennsylvania in the M.C.Z. (Melsheimer coll.); and of *sexpustulatus* from Florida presumably in the National Museum in Budapest (Reitter coll.).

Oblong, convex, punctation moderately dense and coarse, elytra punctate as in the pronotum. Color black except as follows: elytra black, each with a basal and post-median spot; the spots, especially the basal, variable in size and color; the basal oblique and partly enclosing the humeral umbone, usually sublunate, sometimes larger and subquadrate, sometimes reduced and divided to form two or three small spots, separated from the suture by a distance equal to or greater than the width of the scutellum, much closer to the lateral margin; the post-median spot transversely oval, never greatly reduced, occupying from one-third to three-fifths of the elytral width, a little closer to the sutural than to the lateral margin; the spots pale yellow or reddish yellow, often reddish when reduced. The apical margin of each elytron broadly rounded, the apex not produced. Legs, pygidium, and elytra not sexually modified. Length 4–7 mm.

This species is more densely and slightly more coarsely punctate than *fasciatus*, also a little less convex, slightly more parallel, and lateral pronotal margins more strongly reflexed than *fasciatus*.

This species occurs (March 28–Sept., chiefly in April) from New Hampshire (Mt. Lafayette) to "Florida" (Reitter), west through Kansas (Topeka, Kawrence, Riley Co.) and Iowa (Mt. Pleasant, Ames) to Utah (Logan, Magna, Garland, Providence) and Wyoming (Bridger Basin).

GLISCHROCHILUS QUADRISIGNATUS CANADENSIS Brown

Glischrochilus quadrisignatus canadensis Brown, 1932, Can. Ent., **64**, 259.

Type: from Vernon, British Columbia, no. 3377, in the Canadian National Collection at Ottawa, also paratypes in the U.S.N.M. and C. A. Frost coll.

Similar to typical *quadrisignatus* but differing as follows: elytral spots yellow; the basal spot large, subquadrate, oblique, separated from the suture by a distance equal to the width of the scutellum, the length of its sutural margin three-fifths as great as the length of its posterior margin; post-median spot transversely oval, a little smaller than the basal spot, occupying seven-tenths of the elytral width. Length 4–7 mm.

Since the number of individuals intermediate between this and the typical form are about as many as one would expect, it hardly seems necessary to retain this name, particularly since there is no geographical significance attached to it.

This subspecies occurs (April–August, chiefly in the spring) from British Columbia (Vernon, Enderby, Agassiz), Athabasca, Ontario (Vineland Station, Black Rapids, Ottawa), Quebec (Montreal), and Maine (Bethel) south to Oregon (Corvallis), Utah (Logan), New Mexico (Albuquerque), Kansas (Riley Co.), and South Carolina (Tryon).

GLISCHROCHILUS VITTATUS (Say)

Ips vittata Say, 1835, Boston Journ. Nat. Hist., **1**, 170.

Ips dejeanii Kirby, 1837, Richardson's Fauna Boreali-Americana, p. 107. pl. 2 fig. 4.

Ips sepulcralis Randall, 1838, Boston Journ. Nat. Hist., **2**, 19.

Types: of *vittatus* from "Arkansaw", probably eastern Colorado, is lost; of *dejeanii* from northern Canada is in the British Museum; of *sepulcralis* from Maine is lost.

Elongate, shining, slightly more elongate and less convex than *confluentus*, brown to black with the following elytral markings: pale yellow spots, three of these elongate, oval, arranged in a row parallel to and moderately distant from the suture, one basal, another at basal third (these often joined together), and the other at apical third, the spots except the basal frequently joined with two more external spots which are sometimes reduced or obsolete. The spots may be reduced to one very small basal and one very small apical spot on each elytron. Head finely, moderately densely punctate. Prothorax with sides moderately arcuate, more or less obliquely narrowed posteriorly and more or less sinuate before the subrectangular hind angles, the lateral margins narrowly reflexed, surface moderately densely and coarsely punctate. Elytra punctate as in the pronotum. Elytral apices rounded in the male and strongly produced in the female. Length 3.5–6 mm.

This species is most nearly related to *confluentus*.

This species occurs (April–Sept.) from Alaska, British Columbia (Vavenby, Midday Valley, Trinity Valley, New Westminster), Alberta (Banff Sp., Crowsnest, Edmonton), Manitoba (Lake Dauphin), Ontario (Beaver Mine, Sudbury), and Quebec (Montreal, Hull, Kazubazua) south to California, Nevada, Utah, Colorado (Glennhaven, Veta Pass), and in the east to North Carolina.

Glischrochilus confluentus (Say)

Engis confluenta Say, 1823, Journ. Acad. N. S. Philad., **3**, 195.
Ips confluens Lec., 1859, Writings of Thomas Say, **2**, 125.
Type: from "Missouri" (T. Nuttall coll.) is lost.

Elongate, shining, slightly more convex than *moratus* and distinctly less convex than *lecontei;* black, rarely brown, with the following elytral markings: the black areas consisting of the apical third, the lateral margin including the humeral umbone, the suture rather narrowly in basal third or half, a subsutural spot near base sometimes connected with the sutural stripe, and a large submedian spot rather narrowly connected to the lateral and sometimes to the sutural stripe. The color markings are more constant than in related species. Head moderately coarsely and densely punctate. Prothorax with sides more or less feebly obliquely narrowed in front and more distinctly narrowed posteriorly and variably sinuate before the subrectangular hind angles, lateral margins narrowly reflexed, surface rather densely coarsely punctate. Elytra more densely and coarsely punctate than the pronotum. Elytral apices rounded in the male and feebly produced in the female. Length 4.2–6.2 mm.

This species occurs (March 28–Nov. 6, chiefly in April) from Ontario to Georgia, west through "Missouri" and Michigan (Gd. Ledge, Detroit) to Colorado and Nevada.

GLISCHROCHILUS MORATUS Brown

Glischrochilus moratus Brown, 1932, Can. Ent., **64**, 261–2.
Type: holotype male from Aweme, Manitoba, no. 3318 in the Canadian National Collection, Ottawa; paratype in the U.S.N.M.

Elongate, shining, less elongate and slightly less or as convex as *vittatus;* uniformly black except for the following elytral markings: the suture except in basal fifth and apical third pale red (red markings may rarely be absent along the suture), this red band extending externally at its apex and obliquely to a point behind the humeral umbone at its base, a branch extending from behind the umbone to the base near the scutellum; this band subequal in width throughout, its width and the distance separating it from the lateral margin behind the umbone and at apical third subequal to the width of the scutellum; very rarely the elytra may be immaculate or have only a basal spot on each elytron. Head moderately finely and densely punctate. Pronotal sides rather feebly arcuate, feebly sinuate before the subrectangular hind angles, surface sparsely and finely punctate, more coarsely punctate at the sides. Elytra more coarsely punctate than pronotal disc. The larger females are usually less convex than the males. Length 3.6–6 mm.

Although most closely related to *confluentus*, particularly in the shape of the prothorax and in the elytral markings, *moratus* differs in color and in being slightly less convex and more finely punctate.

This species occurs (March 29–Nov. 17) in British Columbia (Summerland, Copper Mt., Creston), Alberta (Cypress Hills, Edmonton, Leduc), Manitoba (Aweme), and Ontario (Beaver Mine); also "Texas, C. V. Riley coll." (U.S.N.M.).

GLISCHROCHILUS LECONTEI Brown

Ips cylindricus Leconte, 1863, Smithson. Misc. Coll., p. 64. (nec Olivier, 1790).
Glischrochilus lecontei Brown, 1932, Can. Ent., **64**, 262.
Type: from Eldorado Co., California, no. 6985, in the M.C.Z. (Leconte coll.).

Elongate, shining, moderately convex, more parallel and convex than any other North American *Glischrochilus* s. str. Color brown to black, rarely immaculate but usually with very variable and often obscure elytral markings as follows: pale red spots as in *moratus*, the basal spot subhumeral, more or less triangular, the posterior spot sometimes bent forward and extended to the suture, the spots may be absent or variable in degree of development. Head finely, rather sparsely punctate. Prothorax with sides nearly straight, slightly converging basally, rarely feebly, arcuately narrowed in front, hind angles obtuse, lateral margins very narrowly reflexed, surface finely, rather densely punctate. Elytra as finely but more densely punctate than the pronotum. Elytral apices rounded in the male, strongly produced in the female. Length 4.5–7.5 mm.

In Arizona, at least, this species has been collected in *Pinus ponderosa* and *strobiformis*. It occurs (March–October, Febr.) from British Columbia (Kelowna) and Manitoba (Aweme) south through Oregon (Sisters), Idaho (Smith's Ferry), South Dakota (Elmore, Black Hills), California (Mono Co.), Nevada, Colorado (Evergreen, El Paso Co., Douglas Co.) to Arizona (Santa Catalina Mts., Rincon Mts., Chircahua Mts.) and New Mexico (Cloudcroft, Vermejo, Las Vegas Hot Springs).

BIBLIOGRAPHY

BATES, MARSTON
1935. The Butterflies of Cuba. Bull. Mus. Comp. Zoöl., **78**, 61–258.

BLACKBURN, C. V.
1891. Trans. R. Soc. S. Australia, **14**, 101.

BLATCHLEY, W. S.
1910. Coleoptera of Indiana, Bull. 1, Indiana Dept. Geol. & Nat. Rec., **1**, 628–650.

BOVING, A. G.
1929. Classification of beetles according to larval characters. Bull. Brooklyn Ent. Soc., **24**, 55–80.

BOVING A. G. and CRAIGHEAD, F. C.
1931. Ill. Syn. of the Principal Larval Forms of Coleoptera. Ent. Amer., **11**, 1–351, pls. 1–125.

BRADLEY, J. C.
1930. Manual of the genera of beetles of America North of Mexico. Daw, Illston & Co., Ithaca. 360 pp.

BROWN, W. J.
1932. The North American species of *Glischrochilus*. Can. Ent., **64**, 255–262.

BRUES, C. T. and MELANDER, A. L.
1932. Classification of Insects. Bull. Mus. Comp. Zoöl., **73**, 24, 419, 431, 435.

BUXTON, P. A.
1938. The formation of species among insects in Samoa and other oceanic islands. Proc. Linn. Soc. London, 150th Session, pp. 264–267.

CRAMPTON, G. C.
1938. The Structures called Parameres in Male Insects. Bull. Brooklyn Ent. Soc., **33**, 16–23.

ERICHSON, W. F.
1843. Versuch einer systematischen Eintheilung der Nitidularien, in Germar, Zeitschrift für die Entomologie, **4**, pp. 225–361.

FABRICIUS, J. C.
1775. Systema Entomologiae, Flensburg et Lipsiae.
1792–1794. Entomologia systematica, Hafniae, 4 vols.
1798. Supplementum Entomologia systematica, Hafniae.
1801. Systema Eleutheratorum, Kiliae, 2 vols.

FALL, H. C.

1910. Miscellaneous Notes and Descriptions of North American Coleoptera. Trans. Amer. Ent. Soc., **36**, 89–197.

FORBES, W. T. M.

1922. The wing-venation of Coleoptera. Ann. Ent. Soc. Amer., **15**, 328–352.

1926. The wing-folding patterns of the Coleoptera. Journ. N. Y. Ent. Soc., **34**, 42–68; 91–138.

FOWLER, W. W.

1889. Coleoptera of the British Islands, **3**, 219.

GANGLBAUER, L.

1899. Die Käfer von Mitteleuropa. Vienna, **3**, 411, 442–565.

GROUVELLE, A.

1908. Coleoptera Clavicorns Reg. Indienne. Ann. Soc. Ent. Fr., **77**, 329–397.

1913. Nitidulidae. Coleop. Cat. Junk, pt. 56, pp. 8–223.

HERBST, J. F. W.

1793. Natursystem etc., Käfer, Berlin, **5**, p. 11.

HORN, GEORGE

1879. Revision of the Nitidulidae of the United States. Trans. Amer. Ent. Soc., **7**, 267–336.

JACQUELIN DU VAL, P. N. C.

1858. Manuel Entomologique. Genera des Coleoptères d'Europe, Paris, **2**, 134–160.

JORDAN, KARL

1938. The species problem as seen by a systematist. Proc. Linn. Soc. London, 150th Session, pp. 241–247.

HUXLEY, J. S.

1938. Species Formation and Geographical Isolation. Proc. Linn. Soc. London, 150th Session, pp. 253–264.

KINSEY, A. C.

1936. The origin of higher categories in Cynips. Sci. Ser., Ind. Univ., Pub.no. 4, pp. 334, 172 figs.

KUGELANN, J. G.

1794. Verz. d.i.e. Geg. heussens . . . Käferarten, in Schneider's Mag. **1**, 560.

LATREILLE, P. A.
1796. Précis des Caractères generiques des Insectes, Bordeaux, p. 68.
1807. Genera Crustaceorum et Insectorum, Paris, **2**, 10–19.

LECONTE, J. L.
1861. Classification of the Coleoptera of North America. Smithson. Misc. Coll., **3**, 81–85.

LECONTE, J. L. and HORN, G. H.
1883. Classification of the Coleoptera of North America. Smithson. Misc. Coll., **26**, 1–567.

LENG, C. W.
1920. Cat. of Coleop. of America north of Mexico. Mount Vernon, pp. 194–197.

LENG, C. W. and MUTCHLER, A. J.
1927 and 1931. Supplements to the Catalogue of Coleoptera of America north of Mexico. Mount Vernon.

LESNE, P.
1938. Sur un Nitidulide Mycetophage Nouveau et sur quelques caractères de la Famille. Revue Fr. d'Ent., **5**, 158–168, figs. 1–19, pls. 1, 2.

LINNÉ, C.
1758. Systema Naturae, ed. 10, Holmiae.

MACBRIDE, E. W.
1938. Mutations and Variations and their bearing on the origin of species. Proc. Linn. Soc. London, 150th Session, pp. 227–231.

MATHEW, W. D.
1939. Climate and Evolution. Spec. Publ. N. Y. Acad. Sci., **1**, pp. 223.

MURRAY, ANDREW
1864. Monograph of the family Nitidulariae. Trans. Linn. Soc. London, **24**, 211–414, pls. 32–36.

PARSONS, C. T.
1936. Notes on North American Nitidulidae: *Pocadius*. Psyche, **43**, 114–118, 9 figs.
1938. Notes on North American Nitidulidae, II: *Cryptarcha*. Psyche, **45**, 96–100, 8 figs.
1938. Notes on North American Nitidulidae, III: *Phenolia, Soronia, Lobiopa, Amphotis*. Psyche, **45**, 156–164, 7 figs.
1939. A Key to the New World *Amphicrossus* (Nitidulidae). Bull. Brooklyn Ent. Soc., **34**, 59–60.

PEYERIMHOFF, P. DE
1933. Les Larves des Coleoptères d'apres A. G. Boving et F. C. Craighead et le grand criterium de l'orde.

POULTON, E. B.
1938. The conception of species as interbreeding communities. Proc. Linn. Soc. London, 150th Session, pp. 225–226.

REITTER, EDMUND
1873. Syst. Eintheil. Nitid. Verh. Nat. Ver. Brünn, **12**, 1–194.
1884. Nitid. Japans. Wien. Ent. Zeit., **3**, 257–272, 299–302.
1911. Fauna Germanica, **3**, 2, 10–41.

RENSCH, B.
1938. Some problems of geographical variation and species formation. Proc. Linn. Soc. London, 150th Session, pp. 275–285.

SHARP, DAVID
1891. Biologia Centrali-Americana, Coleoptera, **2**, pt. 1, Nitidulidae, pp. 265–288, pls. 8–12.

SHARP, D. and MUIR, F.
1912. Comparative anatomy of the male genital tube in Coleoptera. Trans. Ent. Soc. London, pp. 477–642, pl. 42–78.

SHUCKARD, W. E.
1839. The Elements of British Entomology, p. 165.

SIEPMANN, C. G.
1931. On the validity of *Glischrochilus quadrisignatus* Say. Bull. Brooklyn Ent. Soc., **26**, 24–35, pl. 2.

SKOTTSBERG, C.
1938. Geographical isolation as a factor in species formation, and its relation to certain insular floras. Proc. Linn. Soc. London, 150th Session, pp. 286–292.

STEPHENS, J. F.
1830. Illustrations of British Entomology, Mandibulata, **3**, 30, 45.

ULKE, HENRY
1902. A List of the Beetles of the District of Columbia. Proc. U. S. Nat. Mus., **25**, 18, 45, 46.

VERHOEFF, CARL
1893. Vergleichende Untersuchungen über die Abdominal segmente, insbesondere die Legeapparate der weiblichen Coleoptera, ein Beitrag zur Phyllogenie derselben. Deutsche Ent. Zeitschr., pp. 209–260, pls. 6, 7.

1918. Zur vergleichenden Morphologie des Abdomens der Coleoptera und über die Phylogenetische Bedeutung desselben. Zeitschr. fur Wissensch. Zool., **117**, 130–204, pl. 2.

Verhoeff, K. W.

1923. Beiträge zur Kenntnis der Coleopteren Larven, mit besonderer Berücksichtigung der Clavicornia. Arch. Naturgesch., **89**, 1–109, pls. 1–7.

Wandolleck, Benno

1905. Zur vergleichenden Morphologie des Abdomens der weiblichen Kafer. Zool. Jahrb., **22**, 477–576, pl.

Wheeler, W. M.

1893. A Contribution to Insect Morphology. Journ. of Morph., **7**, 1–160, pl. 6.

Winge, O.

1938. The genetic aspect of the Species Problem. Proc. Linn. Soc. London, 150th Session, pp. 231–238.